COAL AGE

Volume 15 New York, March 20, 1919 Number 12

Health and Industry

By Floyd W. Parsons

MINE officials in many localities are having a little rest from the strenuous war days of last year. This affords them an opportunity to analyze their industrial situation and lay plans to improve conditions and eliminate danger spots.

There are other matters of importance besides prices, wages and markets, and one of the things that might be studied with profit right now is the question of health as it relates to industry. The degree of health that employees enjoy determines largely their degree of happiness, contentment and efficiency.

No other machine compares with the human machine in industrial importance, and yet the average corporation manager is often more concerned about the grade of oil that is fed into the company's mechanical equipment than he is about the quality of the water that the employees drink.

No company should approach the problem of maintaining and improving the workman's health in a spirit of philanthropy. It should be viewed purely as a matter of good business, not of kindness. Company officials may use their corporation's funds to increase operating efficiency, but not to engage in acts of benevolence. Furthermore, workmen are resentful and suspicious of plans that appear to be based on charity.

Careful investigations show that the time lost by workmen through illness is far greater than that lost as the result of industrial accidents. Some day the money losses to employees from sickness will have to be borne by the employer or the state in the same way that losses through accidents are now borne. Workmen's compensation was originally established to insure the individual against losses he is unable to bear, and it is only a matter of time until other misfortunes than accidents will be included in the list of things for which compensation shall be paid.

During the war there was a serious let-up in safety and welfare work on the part of many corporations, due to the urgent demand for increased production. In the mining industry, as well as in other fields, the various companies have been rather slow in getting back on a pre-war basis. This situation is regrettable because of the fact that professional trouble makers are now taking advantage of every opportunity to point out the weak spots in our present industrial system. No time should be lost and no effort spared to bring first-aid and welfare work back to a pre-war basis of efficiency.

Not only is this desirable, but company officials should not stop there. The time has arrived when the successful manager should make a study of human physiology and endeavor to find ways whereby such knowledge may be applied to working conditions in and around the mines. Ninety per cent. of the problems of health have to do with matters of prevention, while 99 per cent. of the Nation's doctors devote themselves, not to prevention, but to curing the ills of mankind. One company employing several thousand men has seen the light of coming events and has established a system whereby the chief efforts of the company's doctors are devoted to keeping the employees in good health. When sickness does result to one of this company's workmen, or to any member of his family, the company foots the bill. Over a period of a year the cost of the plan to this corporation was a little less than $12 per workman, or about 4c. per day per man.

Other investigators are now getting facts concerning the cost to their company of various deficiencies, such as a poor water supply, unsanitary surroundings, inadequate washing facilities, poor ventilation, insufficient drainage and sewage, and dozens of other conditions tending to affect, not only the health, but the moral well-being of the men and their families. It is doubtful if any class of work that a mining company could do would show better results in the way of reducing operating costs than a properly conducted campaign designed to encourage the observance of strict personal hygiene on the part of employees. The average workman has very little idea of what may be termed a balanced diet on which he can do his work with greatest efficiency and least effort. An investigation of the dinner pails of employees at a southern mine showed an astonishing situation. Not one man in ten had in his bucket the proper rations on which to base a maximum physical effort.

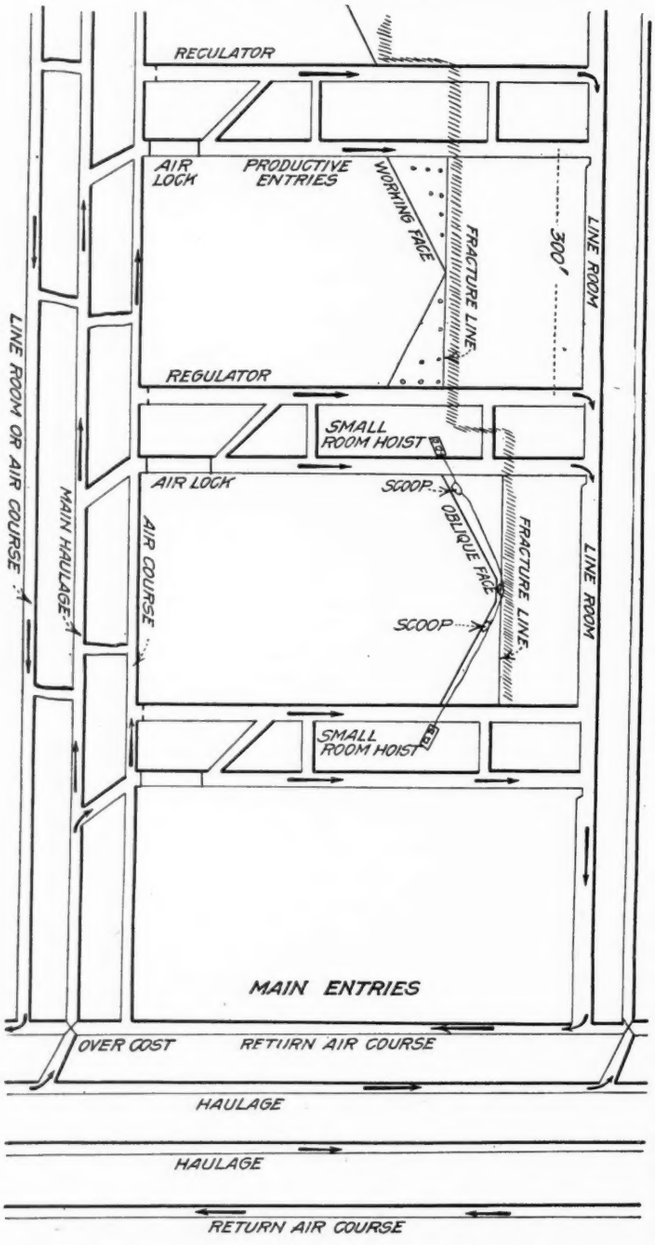
This matter of health right now is of such vital importance that this first page in Coal Age will be devoted to a discussion of the subject for several weeks to come. Above all things, at the present moment, we need sound minds, and these we cannot have unless first we have sound bodies. Contentment and health grow on the same tree. Ill-health and unrest are fruits of another vine.

IDEAS AND SUGGESTIONS

Longwall System for Low Coal Seams

BY CHARLES MARTIN
Seward, Penn.

The accompanying illustration shows a modified longwall system for working low coal beds that I would like to submit to the readers of *Coal Age* for criticism. This proposed method, as shown on the drawing, permits the use of all machinery formerly employed in the room-and-pillar method and does away with any extra expense for new equipment. There is no big, heavy, cumbersome machinery to be moved in following up the face, and little or no expense will be connected with its installation as compared to the present systems. I feel satisfied that quite a large tonnage could be handled by a few men.



MODIFIED LONGWALL SYSTEM FOR LOW COAL BEDS

One of the advantages I think this system possesses over the old methods is the oblique face, which gives protection to the workmen and machinery and keeps the line of fracture behind the active face. Another big advantage is high recovery, as with this method I can see no reason for losing any coal. Furthermore, it eliminates to a considerable extent the possibility of a squeeze or creep.

I would like to hear from some one who has had experience with some of the late methods of longwall or the new methods where scoops are used.

The following is a description of how this system works out in theory: The productive entries are driven practically the same as in room-and-pillar working except that both headings are driven as haulageways, having either the bottom or top taken to give the required height. These can be driven on any centers suitable to conditions. I have shown these on the drawing as being 300 ft. apart, which gives little better than a 150-ft. face on either side of the fracture line. Then by using two small room hoists, one on each heading, as shown, and two scoops of about one-ton capacity, these can work in conjunction in moving the coal down to the loading platform, working alternately back and forth. Practically any of the late type shortwall mining machines used in the room-and-pillar system can be adapted to this system to good advantage, by either cutting clear across the face (and when this is cleaned up reverse the bits and cut back across the face) or using two machines, one on either side.

The main entries can be driven on either the three, four or five-entry system, according to the size of the field.

A Spring-Operated Frog

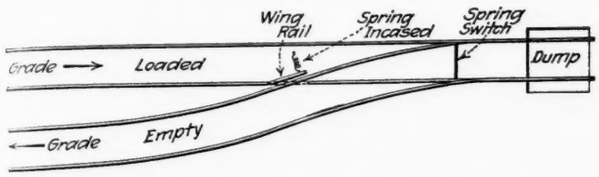
BY H. C. COCKILL
Jacob, Penn.

While a crossover dump is no doubt economical and satisfactory where a large output is obtainable, we sometimes run across an "old-fashioned dump" where the dumper is required to pull the empty car back up the grade until after it passes the frog on the loaded track. This is a hard and laborious process where only one man has the task to perform.

In order to do away with this tiresome operation the company with which I am connected has installed on the tipple at its Jacob mine the spring frog shown in the accompanying illustration. The wing rail shown is about 4 ft. long. The spring may well be a heavy door spring. The loaded cars, after leaving the scales, come down the grade, throwing the wing rail against

the action of the spring in line with the rail or the loaded track. This springs back into the position shown in the diagram immediately after the loaded car passes over it on its way to the dump.

After the car is emptied of its contents the dump, if properly balanced, will come back to its original



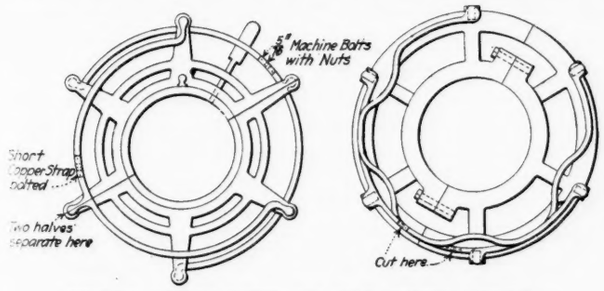
SPRING-OPERATED FROG INSTALLATION

position. The resulting jar will give the car a start which, with a slight pull on the part of the dumper, moves the car through the spring switch close to the dump and thence down the grade of the empty track. The diagram shows how easily the empty track can be placed at a lower level than the loaded track when the frog trouble has been eliminated. The spring should be planked over to avoid damage. This spring frog has been in use for the past three years and has been found quite satisfactory.

Disconnecting Generator Brush Yokes

BY J. J. NOLAN
Linton, Ind.

No doubt many readers will recognize in the accompanying illustration the two brush yokes used on two old types of generators frequently seen in mining plants even yet, and usually doing good service too. Those having charge of them possibly have had occasion at some time or another to dismantle the yoke and brush holder arrangement for such a cause as the bearing getting hot, burned out, or worn out, or perhaps to repair or turn up the commutator. We will assume that previous to this time the machine had been giving no trouble from poor commutation or other cause and required little attention, and that after reassembling



BRUSH YOKES USED ON OLD GENERATORS

with care and precaution, it did not give as good results as formerly. The firm with which I am connected has several of these types to care for and has had occasion to dismantle them for the reasons above enumerated. The drawings show how, by proper care, a considerable amount of work and worry may be avoided.

The cutting of the copper bar connector does not necessarily need to be done until occasion requires this yoke to be taken off for some cause. Then with a hacksaw cut each one through as shown, then take the piece to the drill press and bore the holes shown. A breast drill will do the work just as well.

It will be observed in the left hand figure that only two brush holders are disturbed, these being the two in the joint where the yoke separates, while in the right-hand figure none is disturbed.

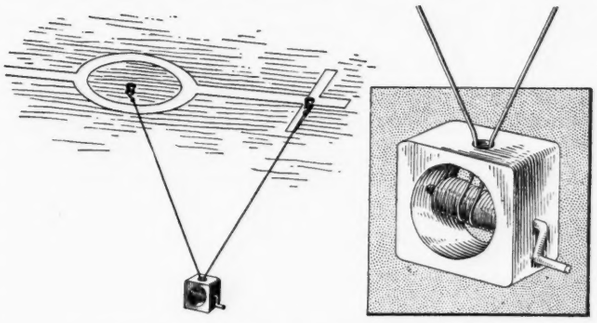
The whole operation of dismantling and reassembling can be done in this way in a short time, while with the old method when one is compelled to hurry through the job on account of the generator being needed proper attention is probably not given to care in spacing and fitting the brushes and holders. This often results in the holders getting misplaced owing to confusing marks. Each brush must then be sanded to fit.

In many instances the proper attention and care is not taken in spacing and adjusting all holders the same distance from the commutator. The proper space between brush holder and commutator should not be over $\frac{1}{8}$ to $\frac{5}{32}$ inch.

Homemade Double String Plumb Bob

BY C. W. STAFFORD
Stone, Ky.

The illustration below shows a homemade double string plumb bob which supplies a long-felt want among mine foremen and their assistants. The particularly attractive features of its construction are its concentrated weight (being made of lead) and the fact that the two strings are wound upon the spindle inside the



DETAILS OF AN EASILY MADE PLUMB BOB

block. They are thus not liable to get tangled up among themselves or with the other plunder in a man's pocket. This device is alweays ready for use and certainly beats the piece of rock or spike used by many. It can be made in any mine shop in a few minutes. So far as I know, the first one was made by Mine Foreman Tom Mitchel, of Hardy, Kentucky.

Incombustible Matter in Mine Air

The old method of computing the amount of incombustible matter in the air of coal mines and quarries was to proceed by analysis, arriving at differences after evaporating moisture and burning what could be burned. In 1912, J. Taffanel introduced his volumetric system, recently severely tested by the Bureau of Mines.

The Taffanel volumeter as constructed was found wanting in accuracy. But by enlarging the diameter of the tube and lengthening it by 20 per cent. it was possible to increase the weight to be tested to 20 grams, twice the former quantity. This gave excellent results.

The Mines of Bruay, France

By Gaston Libiez
Peru, Illinois

SYNOPSIS — *The deep shafts tap several coal beds of varying thickness. The thinner measures are worked longwall, while the thicker ones are worked in panels. Hydraulic flushing is practiced with considerable success.*

AT THE present time a few words about the French collieries located at Bruay, Pas-de-Calais, 30 km. (18½ mi.) northwest of Lens, the great mining center, and 12 km. (7½ mi.) southwest of Bethune, the seat of large mining developments, will be of interest. The mining company operating at Bruay has several large up-to-date mines, as may be seen from the accompanying illustrations. I will give some explanation of the working methods employed at the No. 3 shaft, as I feel sure it will interest many readers.

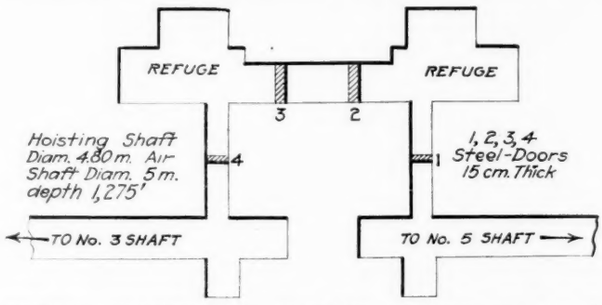
The No. 3 shaft is 1275 ft. deep, eleven beds are worked, the first one being reached at 839 ft. The beds pitch about 7 deg., the largest bed being about 12 ft. thick. The longwall system of mining prevails in the small beds, but the larger ones are worked by the panel retreating system. The gob is filled by flushing with culm or a mixture of water and sand as soon as the pillars are removed.

From the main shaft a main gangway is driven on both sides along the strike until the boundary is reached. Inclines are driven on the rise to meet another gangway starting from the first incline. This gangway is used as the main return when both roads have reached the property limits. It contains a pipe line for hydraulic filling and also telephone lines. Additional inclines are only started in retreating, when the removal of pillars tributary to the last or farther one is well under way. These are spaced 60 m. (197 ft.) apart. From these inclines roads are turned toward the workings at 15 m. (49 ft.) center to center.

The removal of pillars is accomplished by taking steps 5 m. (16.4 ft.) wide with a little airway well timbered alongside on the rise. The pillar being 15 m. (49 ft.) long measured on the pitch, there are 75 sq.m. (90 sq.yd.) to be filled at the start. Next the passageway timbers are removed, while the next pillar or step is taken out and the timbers used again.

The filling material is brought by pipes 130 mm. (5 in.) in diameter and arranged at the head of the place to be filled in two branches with a valve between to control the flow in either branch. This arrangement facilitates the flushing and work is not unnecessarily stopped.

About 2000 hectoliters (261 cu.yd.) of material are stowed per hour. Along the passageway props and timbers are strongly set to resist pressure, and plank or boards 10 to 15 cm. (1½ to 4 in.) wide by 1.5 to 2 cm. (⅝ to ¾ in.) thick are nailed to their bases. Upon these boards a piece of canvas 1 m. to 1.5 m. (3 ft. 3½ in. to 4 ft. 7½ in.) wide is nailed from one road to the other. Additional boards are nailed in place above to keep the first roll of canvas taut; another roll is then nailed above the first, and so on to the full height of the workings. The canvas is loosely woven and full of small holes, thus permitting the excess water to gravitate and relieve pressure. Men employed at this bratticing keep striking lightly along the brattice to assist water in flowing out. The water returns to the sump, where it is pumped out again.



REFUGE CHAMBERS IN PASSAGE CONNECTING MINES

The bottom of the main shaft is provided with a sump about 30 ft. deep. A little below the level of the bottom a ditch 1200 m. (3940 ft.) long by 1.80 x 2 m. (7 x 8 ft.) is driven in solid rock to accommodate the excess water in its return from the workings. A small pump or a siphon draws the water from local sumps into this road.

All this water is handled by a powerful centrifugal pump and discharged on the surface into a large reservoir, to be used anew. The pump discharge is about 3.35 m. (985 gal.) per minute against a head of 360 m. (1180 ft.). It is driven by an electric motor operating at 5000 volts, 44 amp. and 1500 r.p.m. Culm banks from nearby coke ovens belonging to another company were bought at transportation cost. The present system has been in use for the past 15 years. Sand and gravel coming from the seashore is also employed as a stowage material.

VIEWS OF MINES NOS. 1, 3 AND 6 AT BRUAY, PAS-DE-CALAIS, FRANCE

In the mining at and near the boundary, ventilation is secured mainly with compressed air. The main pipes are 150 mm. (6 in.) in diameter. These are decreased to 100 mm. (4 in.) in diameter at the boundary of each district. On the cross roads or close to the working places pipes 70 and 50 mm. (3⅜ and 2 in.) in diameter are taken off for drilling machines and punchers, while 30-mm. (1⅛-in.) pipes are used for small ventilators or blowers necessary to ventilation. When driving an incline or a main gangway, large tubes are used to convey the air. They are connected in lengths of 2 m. (6½ ft.), the joints being well calked to avoid short-circuiting of air. At the mouth of each entry or road a connection is made from a supply pipe of 30 mm. (1⅛ in.) in diameter and a nozzle arranged to produce an injector effect. A valve is placed at each of such connections.

On tunnel work a small fan is used to advantage. But little gas is encountered. However, where small quantities are given off or fear of meeting gas is entertained, a more powerful fan is used in connection with tubes at least 50 ct. (2 in.) in diameter.

Punchers are used to undercut and shear the coal, and permissible explosives are used to bring it down. Where shooting is done the bottom of working places is covered with fine clay or lime 1 in. thick, to cover and neutralize the coal dust. Also at the mouth of a hole or in its immediate proximity a piece of thin sheet steel is suspended in order to receive the first blow of the shot. This sheet measures 1 m. x 80 cm. (3 ft. 3 in. x 2 ft. 7 in.). It is claimed that this scheme gives good results. As a further precaution against dust explosions boards loaded with pulverized cinders are hung 30 ct. (1⅛ in.) center to center between the timber sets by iron rods and so arranged as to upset at the shock of a light explosion.

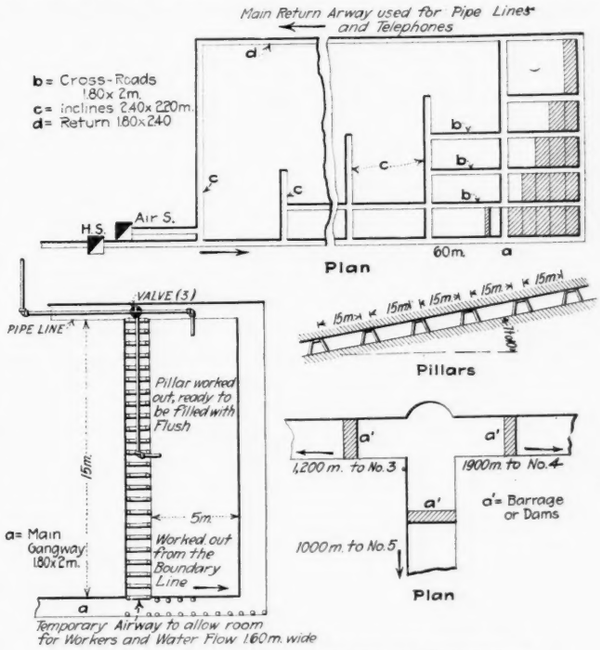
It is a law in France that all underground workings be connected, and as a precaution the company has developed a scheme to prevent an explosion from propagating into the next workings. When the two roads to be connected are close to each other a narrow passage is turned at right angles and driven 90 ct. (35 in.) wide and 5 m. (19½ ft.) long; when this distance is reached, another right-angle turn is made and a passageway the same dimensions as the former is again started to meet the other connection from the other shaft. The height of these passes is 2.50 m. (8 ft. 3 in.). Four doors of steel 6 in. thick are put in place, opening against each other. At the four corners wide rooms are excavated as refuge places. All this work is heavily reinforced with concrete.

Connection with the drainage ditches for water is also made between the shafts. These meet at a common point where any one of them can be closed by a suitable dam so that either may be cleaned out. The three shafts connected have ditches 1200, 1900 and 1000 m. (3940, 6250 and 3280 ft.) long respectively. The dams or barrages shown on the drawing are operative only when needed for cleaning.

The operation here described has an output of 3000 to 3700 cars daily. These cars contains eight hectoliters (28¼ cu.ft.) and are not topped. The cages hold eight cars. The number of men employed is about 1000, of which number 300 are on the night shift. There are 26 bosses for both shifts under a mining engineer.

It is needless to say that only safety lamps are in use. An explosion occurred in a mine located only few miles away that impressed upon everyone the advisability of using these lamps. This happened in 1912, if I remember rightly. A fire started in a certain coal bed and was well smothered. But I think that the stoppings were not properly made as a disastrous explosion occurred as the result.

The Bruay mines have suffered from the shelling of the Germans. The whole town was evacuated when the enemy drove toward the coast last spring. Many homes were wrecked and the people had to wear gas



DETAILS OF THE METHODS OF WORKING

masks day and night for months. The miners have worked nine hours a day during the war.

I am much pleased to read Arthur J. Baldwin's statement in *Coal Age* that "it will be a worth while result if ancient practices are abandoned and mining machines introduced." Indeed there are many coal beds in France that I believe could be worked successfully with coal cutters, as in driving roads to the property limits and in drawing pillars.

As the result of the Lens devastation one can readily believe that Bruay has been crowded for the past 4 years. In peace time the population is well over 18,000 inhabitants, all miners. Thank God that these mines are saved to France intact!

In the event of a mine disaster provision must necessarily be made for receiving the bodies of those killed or preparing the bodies for burial. The improvised morgue should be within a building that is well ventilated and has good drainage facilities. Men may be found alive within the mines, severely burned or so injured as to requre hospital treatment, and a building should be selected that can be readily used as a hospital. In the selection of the morgue and the hospital the advice of the local surgeon or physician and undertaker should be sought.—*Rescue and Recovery Operations in Mines.*

Details of Important Mining Bill Before the British Columbia Legislature

By Robert Dunn
Victoria, B. C.

SYNOPSIS—*An important bill is before the British Columbia Legislature proposing many changes of statute affecting mines. Among the more important of these are provisions concerning miners' examinations, the treatment of hoisting ropes and the practical elimination of all but safety lamps for miners' use.*

REGULATIONS of great importance to the coal-mining industry of the province have been laid before the British Columbia Legislature by the Hon. William Sloan, minister of mines, in a bill entitled "An Act to Amend the Coal Mines Regulation Act." These will radically change for the better the present system of conducting examinations for first, second and third class coal-mining certificates, removing much of the present superfluous administrative machinery by placing the new widely distributed authority in the hands of one competent and responsible board of examiners. These regulations apply also to the existing methods of examining and issuing certificates of competency to coal miners. It is proposed that one traveling board of examiners shall have charge of this important work, the duties of which shall be to go from colliery to colliery throughout the province for the purpose of passing upon the proficiency of coal miners applying for certificates.

Various other changes are provided for, having in view making the mines safer and removing, as far as possible, the chief dangers with which the underground workers have to contend. In some of the latter legislation British Columbia is setting the pace for America, notably in respect of the proposal that all wire cables shall be given hot oil baths at regular intervals and in a provision which, in its application, will practically eliminate all but safety lamps in underground coal workings.

Would Appoint a Minimum Wage Board

The initial provision of the bill is under the subtitle "Constitution of Coal Miners' Minimum Wage Board." The text of this section is clear in itself. The board is to consist of the chief inspector of mines as chairman and "two other members to be appointed by the minister, one of whom shall be appointed to represent the mine owners and one to represent the coal miners." The duties of this board shall be to "define and redefine any portion of the province as a minimum wage district for the purposes of this section; to impose conditions and exceptions to which the application of the minimum wage in any district shall be subject; and to regulate the time and manner of giving notice of the sittings of the board and the conduct of business thereat."

Having fixed a district to which a minimum wage shall apply its duty, naturally, shall be to decide what the minimum wage, within the bounds of the area, shall be, proper consideration being given to general conditions as may be shown by evidence or representations made by the parties affected. For the latter purpose a full opportunity is to be given for hearing at a public sitting of the board of all interested. Any order made shall go into effect on the minister's approval and its publication in the *Provincial Gazette* "at least 30 days before the day named for its coming into operation."

If any coal miner is paid less than the minimum wage to which he is entitled he may recover from his employer in civil action that which is justly due him. This will commend itself to all miners of British Columbia, and, in any event, it cannot be considered otherwise than a step in the right direction, evidencing on the part of the Government an active and direct interest in the question of the remuneration received by underground workers.

Board to Conduct Miners' Examinations

The appointment of a board of examiners "to conduct the examinations in any part of the province of applicants for certificates of competency" is another important innovation. At present this board consists of three coal-mine managers and three representatives of the men from different parts of the province, together with the chief inspector of mines. Its headquarters are in Nanaimo, B. C. Two of the men's representatives are from the Crows Nest Pass coal district, and in the past five years, on one occasion only has one of these representatives been able to attend a board meeting. While provision is made to pay the traveling expenses of those who have to come from a distance, this reimbursement by no means covered the loss of time that trips from various parts of the province to the coast entailed.

The result has been that the board often found it difficult to obtain a quorum. Its duties, too, have been merely of a supervisory character in connection with examinations. It called a meeting, set a date for examinations, appointed outside parties to prepare examination papers, forwarded these on their receipt to the various coal-mining centers, and, having received the papers, duly marked and passed upon by the appointed examiners, forwarded the results to the minister of mines.

It is felt that much of this procedure is useless and besides has had the effect of leaving functions of vital importance in the hands of a few, it being impossible in many instances, as has been shown, for the men's representatives to be in attendance at regularly called meetings. The proposal now is that the new board shall be composed of three members only, one being the chief inspector of mines, as chairman, and two others to be appointed by the minister "one of whom shall be appointed as representing the mine owners and one as representing the coal miners." It will be the duty of

this body, which will be small and by reason thereof able to move easily from point to point if necessary, to conduct the examinations.

The bill makes provision for another alteration in the conduct of examinations of miners applying for certificates of competency. Under the Coal Mines Regulation Act as it stands most of the collieries have their own boards for this purpose, the membership of which consists of a secretary appointed by the Lieut.-Governor-in-Council, a representative of the mine management and a representative of the men.

This arrangement, it is pointed out, was satisfactory so long as there were only a few large operating mines in the province. Conditions, however, are changed. There are now a considerable number of small collieries and, if each of these were given a board to which they are entitled under the act, there might be almost as many members of examining boards as there are miners coming up for examinations monthly.

The situation at the moment is that there are small mines such as that at Telkwa, in northern British Columbia; Coalmont and Princeton in the interior, and Granby and Nanoose on Vancouver Island that are without boards. Consequently, miners applying for certificates to work in any of the latter mines must travel considerable distances in many cases, to take their examinations. Telkwa miners, for instance, must come to Nanaimo; those of Coalmont to Merritt; and those of Nanoose to Nanaimo. In other words, if the method now in vogue were continued, it would be necessary to appoint at least five boards in addition to the nine now organized and some of these would have to be maintained in camps where the number of miners employed is exceedingly small.

Personnel of Examining Board

The board proposed to handle all examinations for miner's certificates of competency will eliminate this cumbersome machinery. Its personnel will be fixed in the same way as that of the board of examiners for "managers of mines, overmen, shiftbosses, firebosses, shotlighters and mine surveyors," except that the "inspector of mines for the district in which the examination is held" will be the chairman instead of the chief inspector of mines. The other two will be named by the minister of mines, one as representing the operators and the other the men. This board will have jurisdiction throughout the province and will move from colliery to colliery at frequent intervals in order to facilitate the issuance of certificates to those who can show that they are properly qualified. This will have the effect of fixing a standard of knowledge for coal mines throughout British Columbia; it will obviate the present difficulty of too much board representation at one point and too little at another; and it will be an added convenience both to the men and the management of collieries.

Another improvement in this connection is that no man will be admitted to a mine to work as a coal miner for a temporary period, pending his examination, as is now allowed. If a man applies for work as a miner and an examination immediately is impracticable he must go before the inspector of mines of the district who, having satisfied himself of the man's qualification, will issue him a temporary certificate. In such cases, however, those affected must go before the regularly constituted board at the first opportunity. The position taken by Mr. Sloan here is that it is a manifest absurdity to allow an uncertificated man to assume the responsibilities of a miner for 30 days without his knowledge being tested, it being possible in that period for an incompetent person to endanger, not only his own life, but that of hundreds of others.

Furthermore such a system, it is considered, will facilitate the control of the practice, where it has been followed, of permitting aliens to work underground. This is a matter on which Mr. Sloan feels strongly and he is confident that, when it is necessary that every man going to work as a miner for any period, no matter how brief its duration, shall prove his qualifications the employment of this class will be effectively checked.

A clear definition of the duties of a fireboss in a coal mine also is given by the amending measure, it being set forth that "the district of a mine assigned to any fireman shall not be of such size as to prevent him from carrying out his inspection duties under this rule in a thorough manner." It has been a standing complaint on the part of men holding this position as well as coal miners generally, that firebosses are handicapped in the faithful discharge of their duties by being required, in addition, to attend to haulage, pumps and various other matters with the result that often their duties at the working face have been neglected.

Defines Duties of Fireboss

It now is to be made law that this official shall "devote his whole time to his inspection duties," the exceptions being only "where the duties assigned to or undertaken by him in addition to his inspection duties are not such as to prevent him carrying out his inspection duties in a thorough manner." It is laid down too that this "shall not prevent the fireman being employed in measuring the work done by persons in his district, or in firing shots in his district, nor shall this provision apply in respect of any mine in which the total number of persons employed underground at one time does not exceed 30." It further is provided that "where any question arises as to whether any additional duties are such as to prevent a fireman carrying out his inspection duties in a thorough manner, the inspector of the district shall decide the question, and his decision shall be final."

One of the most vital of the amendments from the viewpoint of the safety of the mines and of the miners is that which states that, where the mine air in any working place is found to contain more than 2½ per cent. of inflammable gas, it shall be deemed dangerous and the men forthwith withdrawn. The Coal Mines Regulation Act now reads that at any time that the air is found by the person for the time being in charge to be dangerous the miners shall be withdrawn. Thus it is left to the individual judgment of one person to decide what is or what is not the danger point.

This is considered to be too indefinite and to leave too great responsibility on the shoulders of an official. Therefore it is proposed, as has been done in Great Britain, to fix a definite withdrawal point. It may be said, incidentally, that the percentage named as that at which danger commences has been applied by the department of mines, under agreement with the Crows Nest Pass collieries, to the latter coal field for some time.

The succeeding amendment is one which, it is thought, will mean the introduction of safety lamps in practically all the coal mines of the province. Such lamps, it is stated, shall be used, and none other, "in

any mine where the air current in the return airway from any ventilating district in the mine is found normally to contain more than ½ per cent. of inflammable gas." The wording then follows that of the Coal Mines Regulation Act as it now reads to the effect that such lamps must be used in every working approach to any places where there is likely to be found an accumulation of inflammable gas.

In addition to this, provision is made against any possibility of argument or misunderstanding as to how the percentage of gas in mine air is to be arrived at by the following sub-section: "The average percentage of inflammable gas found in six samples of air taken in the air current in the return airway from the ventilating district at intervals of not less than two weeks shall, for the purpose of this section, be deemed to be the percentage of inflammable gas normally contained in the air current."

The provision that "every winding rope shall be given a bath in hot oil before being installed; that every winding rope shall be recapped at intervals of not more than six months, and that no winding rope which has been in use for more than two years or which has been spliced shall be used for raising or lowering persons" no doubt is the direct result of the lamentable accident of last September at Protection Shaft, Western Fuel Co., Nanaimo, when a number of miners lost their lives through the breaking of a cable. The verdict of the coroner's jury, it will be recalled, was that the evidence indicated that the cause of this break was internal corrosion, the primary origin of which was lack of lubrication.

The question of the life of a steel cable is a matter which has been under discussion with no result for many years. Men of the highest technical qualifications have made investigations but no fixed standard as to the life of such cables has been yet arrived at. In Great Britain they may be used for 3½ years so that British Columbia is increasing what is considered an adequate margin of safety in England by 1½ years.

To try and prevent crystallization of chains it also is provided that "all cage chains in general use shall be annealed once at least in every six months, and detaching hooks shall be cleaned and refitted once in every three months."

Minecdotes

"Windy" Thought He Could Fire

Gibbs, the mine inspector, was always good for a story; so when he seated himself comfortably on the bumper of a loaded pit wagon, we knew that he was going to pass something along.

"You know, boys," he began, "that an inspector runs into all kinds of people. Today, I ran across a fellow that was so full of conceit, and so wise, that I offered to sell him my job for a cent. But talking about conceit puts me in mind of a fellow that I knew years ago, in fact I am still acquainted with him. He used to work for the Consolidated at the time when I was assistant superintendent.

"We had an up-to-date equipment in the power house. In the boiler room we had four 150-hp. return-tubular boilers. When we were hoisting coal good and lively it required a pretty good man to hold steam; but fortunately we had just that kind of a fellow, and he always had the pressure up pretty nearly where it belonged.

"There was a fellow dropping in empties under the tipple that we nicknamed "Windy"—and the name was not a misnomer either. Windy was continually pestering the life out of 'Slim,' the regular fireman. He was always telling him just how this and that should be done; how he used to 'burn 'em up' when he was steamboating on the river, and giving him a similar line of bull. He was such a pest that everyone was hoping that he would get the chance to prove his self-proclaimed ability in a practical manner.

"Well, one Saturday, and pay day at that, all the young fellows and a few of the married men wanted to attend a circus at a nearby town, and everybody was going to put forth his best efforts so that we would 'load out' about two o'clock. This would have given us ample time to have caught the local passenger train at 4 o'clock that afternoon.

"As it happened, Slim did not show up at the plant on the morning in question, and as I was temporarily in charge on account of the superintendent being on a vacation, I put Windy in the boiler room. And since he was more or less familiar with the duties that he was supposed to perform, no one gave him any particular attention.

"Everything went along about as usual until near 8 o'clock. It took 'Fat,' the hoister, about that long to warm up. When he did—well, he made that pair of hoisting engines eat steam. I had been pretty busy that morning and had forgotten all about Windy, when Fat gave my call on the signal whistle. When I poked my head into the hoistroom, Fat was sitting on his stool taking things easy. He pointed to the steam gage and nodded toward the boiler room—60 lb. of steam, blocked out on the bottom with loads, and top of this that bunch of men thinking of that circus.

"I went into the boiler room and tried to open the first firedoor that I came too. It was hotter than blazes, as were all the rest of them. Using a shovel, I got some of them open; the fires were banked on the dead plates and front of the grates clear up to the boiler shell, and the heat was terrific.

"What in the thunder is the matter?" I asked Windy. "I thought that you could fire boilers?"

"Fire!" he exclaimed, "of course I can fire, did you ever see a hotter fire in your life? Say, man, if these old kettles had any draft I could burn 'em up."

"Well, I fired Windy out of the place, bag and baggage, for the boys would have mobbed him after his getting us in such a mess as that. However, with the help of the oiler, we got things started again, but we didn't load out until about quitting time. Windy left the camp and it was a long time before I saw him again. He is still full of conceit, the same as always."

"Where's he at now?" asked Williams, the boss hauler

"Oh, that is the fellow that I ran into today up on 2d East entry, the fellow that I offered to sell my job to for a cent," answered the inspector.

Modern Shaft Development of the Consolidation Coal Company—II

By George W. Harris
Editorial Staff, *Coal Age*

THE underground development at the No. 87 mine is entirely in keeping with the surface improvements—nothing for show but everything substantial and carefully thought out. In this connection the comment of a progressive coal man comes to mind—he always endeavored to secure the best talent he could find to fill the position of mine boss. On the surface all was open to the light of day, but underground there was infinite opportunity for leakage and it was considerably more difficult to keep track of matters—the running of the whole plant is affected by the movement of coal to the shaft.

In a section with a topography like West Virginia the first consideration in locating a mine opening is to place it so that the tipple taking the coal from it can be reached by a railroad. In the case of mine No. 87, the location of the shaft being decided upon, the layout of the mine came up for consideration.

The faces and butts of the coal determine the course of the entries. The face headings and rooms are on the line S 12-30 W, and the butt headings are S 77-30 E or the reverse—N 77-30 W. The next important consideration influencing the layout of the mine is the location of old and new gas wells—it is necessary to have the mine workings miss them all. An adequate pillar of coal must be left around each well, the size of this pillar being determined by the amount of cover over the coal at the well. The Consolidation company has adopted the following rule governing this matter:

Cover	Size of Block of Coal
200 ft. or more	200 ft.sq.
200 to 100 ft.	Decrease 1 to 1
100 to 20 ft.	Decrease 1 to 2

For example:

225 ft. cover requires a block 200 ft. square
165 ft. cover requires a block 165 ft. square
100 ft. cover requires a block 100 ft. square
80 ft. cover requires a block 90 ft. square
50 ft. cover requires a block 75 ft. square
20 ft. cover requires a block 60 ft. square

It was decided that no protecting block should be less than 40 ft. square and none more than 200 ft. square.

A number of gas wells are located on the map of the territory to be covered by mine No. 87, some of them being shown in Fig. 9. Here the protecting pillar of coal is outlined. The proper protection of these gas wells is a matter of interest to coal operator and gas well operator alike, and coöperation between these two interests is the rule. When a gas well is to be drilled both parties discuss the situation and its final location is determined after consultation. Its exact location is then noted on the maps by the engineers. The Pittsburgh seam at this mine runs from 7 to 8 ft. thick and is reached by the main shaft at a depth of 482.5 ft. The main shaft bottom is shown in perspective in Fig. 7 and in plan and profile in Fig. 8; the top rock was taken down on either side of the shaft and the top and sides were concreted for some 115 ft. with a clearance over the rail of about 15 feet.

It is an exceptional shaft bottom. There is ample room for all operations—the handling of cars and materials. A 34-ft. rail can readily be transferred from the cage to the workings, a result greatly facilitated by the height of the top and its shape at this point. A free use of whitewash and electric lights decrease the chance of accident and increase the speed of handling cars at the bottom. The method of car movement at this point is shown on the plan and profile, Fig. 8, which notes track grades and the disposition of machinery. A car feeder (made by the Fairmont Mining Machinery Co.) moves loads to the scales, where they are weighed, after which a 3 per cent. grade handles them to a Lepley automatic car cager (made by the Connellsville Manufacturing and Supply Co.) which places

FIG. 7. MAIN SHAFT BOTTOM OF NO. 87 MINE

them on the cage at the right moment. On the empty side of the bottom favorable grades handle empties to a car pusher which facilitates the making up of trips for the motors.

Before going into mine No. 87 a person can notice signs placed at critical points about the plant which read, "Be Careful Here"; workmen and others are cautioned to be on their guard at possible danger points. On alighting from the cage at the main shaft bottom, or when attending to the many duties about this spot, men are again confronted by the same good advice. On one wall facing the shaft is the notice "Safety First," as shown in Fig. 7; on the opposite wall on the other side of the shaft has been painted "Be Careful." This should be the most active spot in the whole mine, and danger signals can be made prominent here to great advantage.

The details of railroad yards are matters of grave

concern to the management of transportation systems, for here trains of loads and empties are made up and congestion at this point cripples the efficiency of the railroad. There is greater necessity to plan an underground yard carefully at the start than one on the surface, for mine tracks cannot always be changed at will. When a mine is once opened up and entries driven, the pillars of those entries around a bottom are required to protect the shaft and should not be weakened by extensive changes in plan. The No. 87 mine development is given in Fig. 9; the heavy lines indicate the opening on Dec. 21, 1917, and the light lines the projected extensions. The main development of this mine is planned to go to the north, east and west, and the coal is to be worked out on the room-and-pillar panel method developed on the block system.[1] The mine was projected to follow the plan shown, but conditions may be such that fracture lines will be reversed when robbing starts.

The development, as shown in Fig. 9, was not simply a place to secure coal; a number of conditions influenced the mine layout, as previously noted. Furthermore the mine was opened up so as to have as much room in the intake as in the return. It was thought that at least seven intake entries should be planned; with an entry cross-section of 6 x 10, this would give a total area of 420 sq.ft.; it would permit a capacity of 420,000 cu.ft. of air per minute for the seven entries, with a velocity not greater than 1000 ft. per minute. It was not desired to have a great excess of air, as it would tend to dry out the mine, but sufficient area was planned to allow for falls of rock in the main air courses and still have an adequate area. Provision was made so that two or more additional entries could be driven if a larger volume of air was found necessary and still not interfere with the present development.

When the No. 87 plant was opened up the intention was to pull the loaded trip direct to the shaft bottom, but on account of adverse grades encountered the trips are pulled past the shaft and backed in to it. The grades shown on the profile, Fig. 8, required little grading to establish them; it would have been impracticable to have reversed them, placing the loaded siding where the empty tracks are now and vice versa.

A person will be rewarded by a study of the mine map, Fig. 9, with information regarding the method of development, an idea as to lines of haulage, ventilation, and so on. The course of the air current is indicated by arrows. In a number of instances where two intake airways cross return airways, and crossovers are required, then the intakes are merged into a single opening of enlarged area to save the expense of making two concrete crossovers.

The successful transportation of coal underground depends on good tracks and rolling stock much the same as on the surface. As contributing to serviceable tracks it is planned to use 60-lb. rail on main haulage roads, 40- and 30-lb. on butt entries, 30-lb. on some rooms and 20-lb. on the rest of the rooms. The motive power is to be 10-ton General Electric locomotives on main lines and Goodman storage motors with Edison batteries for gathering cars.

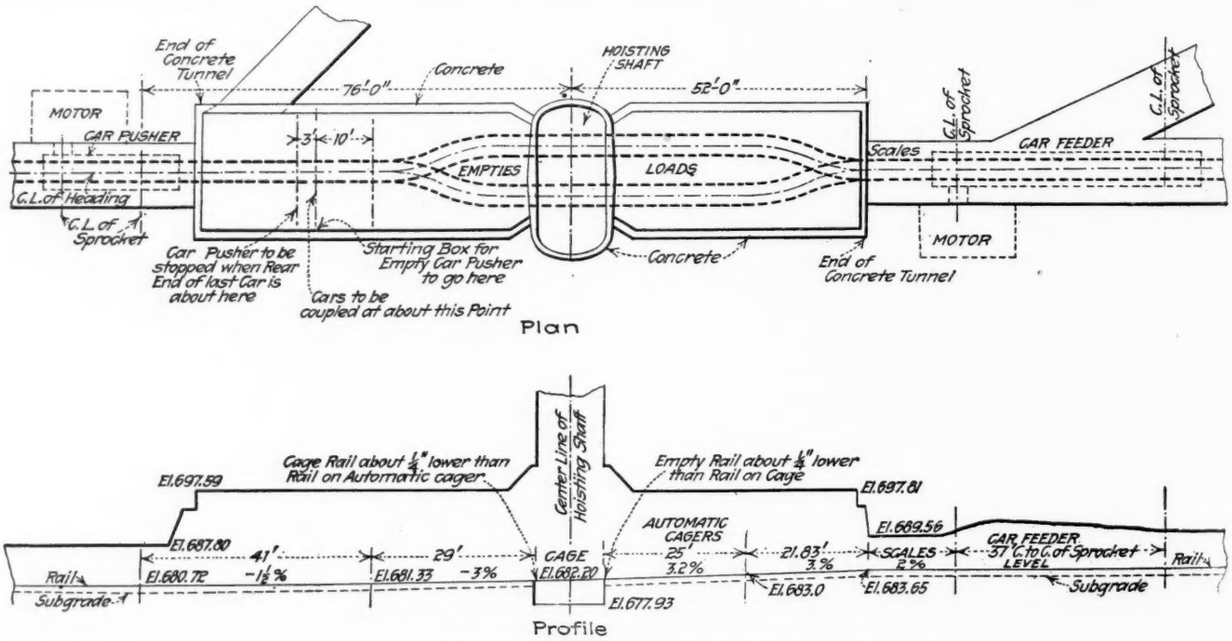


FIG. 8. PLAN AND PROFILE OF THE SHAFT BOTTOM AT NO. 87 MINE

Power is taken from the surface down the shaft by cables which are suspended in fiber conduits. The conduits were placed in the concrete lining of the air shaft when it was concreted, additional conduits being provided at the time to be available should extra cables be required later. These conduits were furnished by the Fibre Conduit Co., of Orangeburg, N. Y. Good transportation of coal is further strengthened by the types and number of mine cars used. Here a 3-ton mine car with iron sides and ends, and wood bottom, made by the Fairmont Mining Machinery Co., is used; Enterprise Foundry and Machine Works (Bristol, Tenn.) roller bearings are employed.

The coal is undercut mainly by Goodman breast min-

[1] A description of this system was given in the Dec. 26, 1918, issue of *Coal Age*, under title of "The Consolidation Coal Company."

ing machines, although a few of the shortwall type are used. All mining machines are driven by inclosed, explosion-proof, direct-current motors. The company is experimenting with a coal drill made by the Fairmont Mining Machinery Co., the drill being mounted on the motor case of the mining machine; this drill readily can be taken off when it is not in use, and it also has an explosion-proof motor. The mine is unwatered as follows: A number of small 2-hp. Fairmont No. 1 portable pumps mounted on a truck and driven by a small motor gather water from local dips and deliver it to a main sump; from this point the water is pumped to the surface by a four-stage, 100-hp., 2300-volt induction motor-driven centrifugal pump.

On coming over the hill from Carolina, or mine No. 86, toward Ida May, one would see the latter town spread out before him as shown in Fig. 1 (see first installment of this article, page 480, Mar. 13, 1919, issue of *Coal Age*). The most prominent features in this scene are the plant around the two shafts toward the left, the store in the immediate foreground, the tipple and the long rows of miners' houses on the hillsides and ravines. Among these latter are the homes of the local officials of the company, in the foreground at the right. In the foreground in the center is the basement of what will be a new school, whose completed outlines are shown in Fig. 10. It is a town with great possibilities, and the company's plans call for improvements which will furnish an incentive for the better class of men to bring their families to this town and make their permanent homes there.

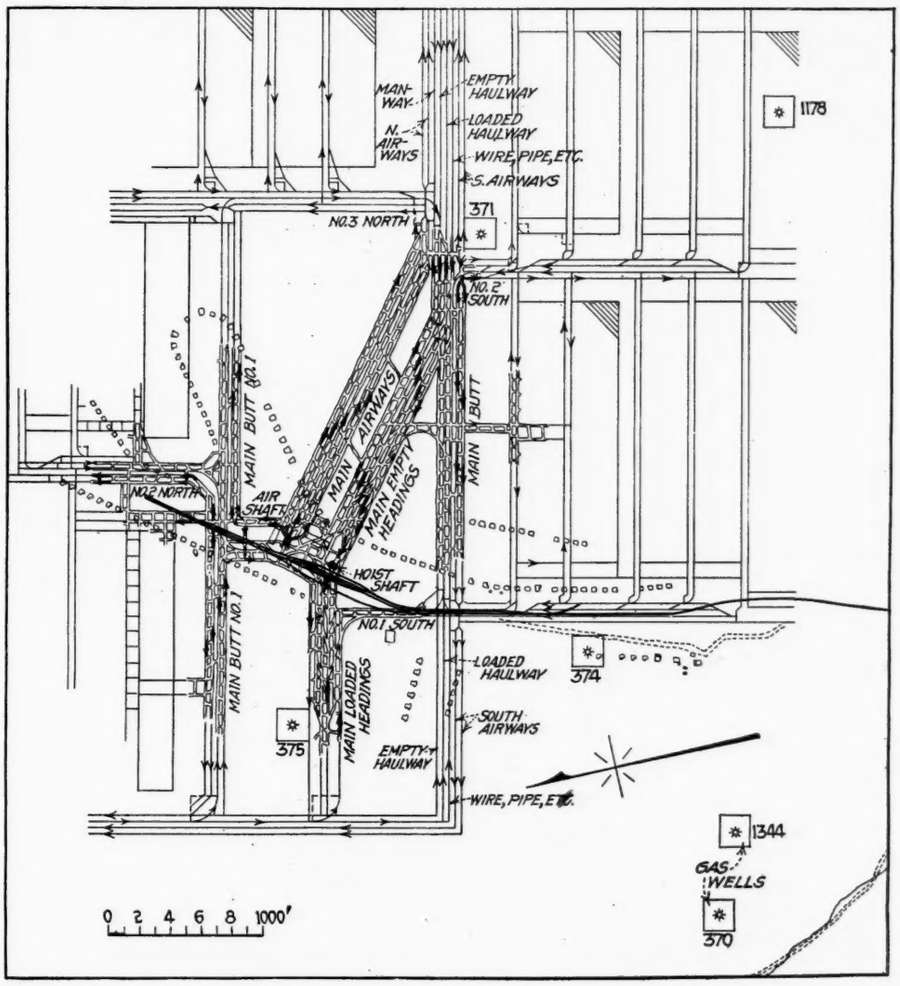


FIG. 9. DEVELOPMENT AND LAYOUT OF NO. 87 MINE

There are several types of houses in the Ida May town, from the three-room single house to the larger double one. However, all are piped for water and natural gas and wired for electricity. A pure water supply is furnished the population of this mining town and sanitary conditions are further looked after by a comprehensive drainage system, which conducts waste water from each home to the creek by which it is carried off. A dozen or more homes have fully equipped bathrooms; they include the superintendents' and doctors' houses, six 6-room cottages and five 5-room houses. These buildings are shown at the extreme right and left in the foreground of Fig. 1. The water supply for the town comes from Taggarts Valley River and is furnished by the Monongah Service Co. A reserve supply is maintained near the town in three tanks on the tops of adjacent hills; a water pressure of 125 lb. is thus maintained and can be fed to boilers when the steam pressure is slightly below water pressure.

Of almost equal importance to an adequate and pure domestic supply of water is up-to-date means of handling waste water. Open drains generally conduct sewage from the miners' homes at this town to main drainage lines which finally empty into the creek; catch basins are built at points where they are required and glazed pipe carry the main sewage system under roads. The type of plumbing installed in all the company's houses is simple, with 4-in. connection to the drain. The open drains seem to be working out satisfactorily and are simple of construction. At the houses they consist of a 3-brick section; a brick at the bottom is laid lengthwise of the drain and one brick at each side forms the slopes; the latter are set with the length at right angles to the bottom line of brick. To protect the drain against disturbance from frost, the ground is excavated to a depth of about 10 in. below grade, then a foundation is built of 6 in. of broken stone or cinder, on top of which is placed 4 in. of concrete; the surfacing brick are set in this concrete. Main open drains are similarly constructed, but with a larger cross-section and foundation. Cement finds free use in and about mines today. At Ida May the top soil contains considerable clay in places, and those who have encountered this ob-

FIG. 10. ARCHITECTS' DRAWING OF IDA MAY SCHOOL

stinate impediment to foot travel in the country at certain seasons of the year should rejoice with those who have cement sidewalks. Such walks are planned to be laid on the principal streets of Ida May, connecting the houses with the store and other parts of the plant; a good beginning has been made in this direction. A 4-in. sidewalk is built of a 1:2:4 mixture on a foundation of 10 in. of cinder.

This town is lighted by a modern series street lighting system, including pipe bracket fixtures, porcelain enameled reflectors and Mazda incandescent lights. A time switch is installed which automatically turns on the light at dusk and extinguishes it at dawn. A "white way" has been established in the center of the plant by the use of two floodlights so placed in the vicinity of the tipple on high poles that a considerable section is well illuminated. New possibilities for lighting large outdoor areas have recently been brought about by the use of floodlights with high power (tungsten) lamps. The type of installation, according to the *Railway Review*, must be carefully selected to suit each individual case, and whereas flood lighting has recently come to the front as an economical means of lighting large areas, it must be used correctly to be effective. It has been used recently for protective lighting to enable watchmen to detect trespassers; under favorable conditions it is said that a 400-watt floodlight will show up a man in dark clothes at a distance of a thousand feet. This system is economical in quantity of current required, in cost of installation and in maintenance. It is not so new as to be an innovation, and yet it is not in such general use as it may become in the near future. Such lights are furnished by the Crouse-Hinds Co., of Syracuse, N. Y., and the Western Electric Co., of New York.

Natural gas is a boon to the domestic user of this convenient form of fuel, although it seems something like "carrying coals to Newcastle" to pipe fuel to a community living around a coal mine. Four-inch gas mains are laid all around the town of Ida May and connect with the gas wells of the Monongahela Valley Traction Co. The 6-in. water mains not only furnish a supply of water for domestic purposes, but also make possible adequate fire protection to the town. At every sixth house along a street there is a hosehouse in which there is a reel of 250 ft. of hose. This length of hose covers half the territory between fire plugs, and with an ample head and supply of water this equipment should do good service in emergencies.

A large proportion of the population about many of our coal mines is often foreign-born, as witness the make-up of the employees at mine No. 87, which includes: Italians, 22; Hungarians, 35; Poles, 7; Croatians, 4; Russians, 2; Spaniards, 2; or 72 out of a total of 187; the remaining 115 being made up of American white, 75; and American colored, 40. There is every reason why the children of this foreign-born element should be properly educated and also that the parents should be Americanized. The Consolidation company does not neglect this great opportunity and provides or assists in the maintenance of educational facilities at its mines, many of which compare favorably with city schools of like grade. A view of the Ida May school now building is shown in Fig. 10. In the basement of this building there will be three rooms for manual training, domestic science and gymnasium work respectively; on the first floor there will be two rooms for the regular schoolwork, one of the rooms having folding doors so that it can be used as a double room when necessary. The school will be heated by gas stoves. It is a substantial brick fireproof building of pleasing appearance.

Improving Recreation Facilities

A nearby store at which the employees can trade is a practical necessity at Ida May; the building, which is shown in Fig. 11, houses the various departments of the store and office at this new town. An interior view of this store is shown in Fig. 12. This company has over forty stores in the various districts in which it is operating, and prides itself on the advantages it thus offers to its employees. The recreation features of the Ida May community are under development. One of the original houses on the property before improvements began has been fitted up as a temporary recreation building; pool and billiard tables have been placed in it and it is also used as a general lounging room. Plans have been made for a new building which will include facilities for many forms of indoor amusements. This company has built extensive recreation halls at several of its operations remote from large towns; several of them have a theater where some of the best moving pictures are shown. In season outdoor sports are encouraged. The local baseball team has a fine diamond on which to practice, and it improved the opportunity to such an extent that it won the championship for three counties during the past season—21 games were won and only four lost. All the men on this team are employees in the No. 87 mine. An illustration of this team was shown on page 57 of the Jan. 9, 1919, issue of *Coal Age*.

FIG. 11. CONSOLIDATION STORE AT IDA MAY

The official family responsible for the smooth running of mine No. 87 includes C. H. Tarleton, manager of the West Virginia division of the Consolidation; W. J. Wolfe, superintendent of both Ida May and Carolina; William McMahon assistant superintendent; C. H. Shear, outside foreman; O. L. Bush, pitboss, and J. E. Jeffries, chief clerk. In addition to those noted previously in the text of the article, the following have placed the stamp of their individuality on this plant:

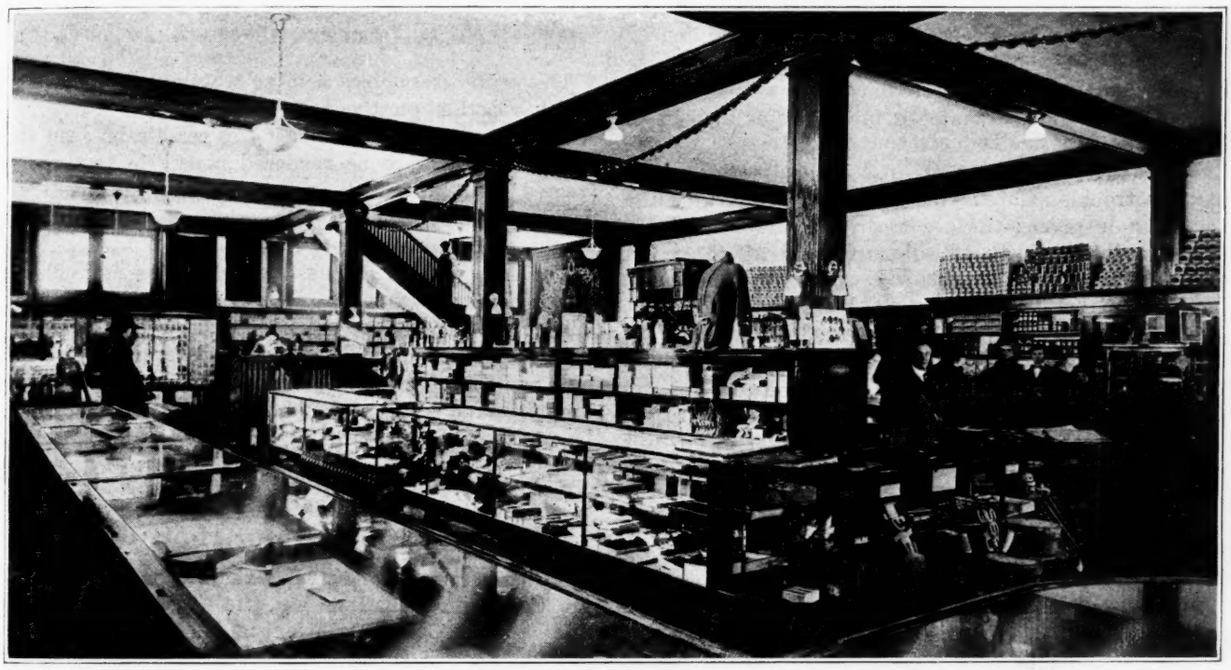


FIG. 12. INTERIOR VIEW OF FIRST FLOOR OF THE IDA MAY STORE

The Allen & Garcia Co., of Chicago, Ill., designed and erected the tipple, and the machinery was furnished for the tipple by the Fairmont Mining Machinery Co., of Fairmont, W. Va. *Coal Age* is greatly indebted to the Consolidation officials and to the designers of the plant for information, photographs and drawings which were used in the description of an operation which possesses features of unusual interest.

Treatment of Acidulous Feed Water for Steam Purposes

BY E. A. REILLY
Pottsville, Penn.

In the treating of water for steam purposes, whether it be only slightly impregnated with organic acids or strongly acidulous with mineral acids, it is recommended that soda ash or caustic soda be used in their neutralization. The use of soda ash is preferred because it is less difficult to handle and will give practically the same results as caustic soda. Any water that is properly treated with either soda ash or caustic soda can be used in boilers without any corrosive effect, either on the boiler shell or on the tubes. It is the opinion of many that the addition of caustic soda or soda ash to a water will cause it to have a corrosive effect on the tubes of the boilers, and make them leak. This idea is absurd and untenable, arising as it does from an unreasonable theory.

The only reason for having leaky tubes from a water that has to be treated with an alkali is that an insufficient amount of the alkali is being added to the water to neutralize its acidity; or it may be that the tubes contain sand spots, or small holes that have been covered over by scale or oxides of iron, and the alkaline water coming in contact with these will have a tendency to loosen such scale from the tubes, causing them to leak. This, in no way, can be blamed to the use of the alkali, as the tubes were defective before the use of the treated water was started.

An idea of the process of treating an acid water for use in boilers might well be given here. First, the amount of water used per day (24 hours) must be known; secondly, the acidity of this water is determined, and from this acidity is calculated the amount of alkali required to neutralize the water. After learning how much alkali is needed for every 10,000 gal., or whatever amount of water the supply tank holds, the alkali is dissolved in warm water and added to the water in the supply tank. The whole is then thoroughly mixed and then tested to see whether it is properly treated.

After the water is properly treated, it is run off into settling tanks and allowed to stand until the precipitate settles; the clear solution is then decantered and is fit for boiler use. Before the water can be said to be properly treated, it should show Na_2CO_3, $NaHCO_3$ or NaOH. It might be mentioned that the foregoing directions apply to the treatment of a mine water, the occasion for which occurs seldom. Waters that are only slightly acid in nature can be treated by the addition of a small amount of alkali (calculated) in three portions at different times of the day. This may be dissolved in warm water and injected either into the tail pipe of the pump or into the supply tank. This will give quite satisfactory results and will be less expensive than other methods in use.

To show that waters of strong acidity, after having been properly treated, can be used without causing trouble, a few examples will be given. One water before treatment showed: Total solids, 384 parts per million; total acidity as sulphuric acid, 44 parts per million. The same water after treatment showed: Total solids, 499 parts per million; alkalinity as $NaHCO_3$, 168 parts per million. The use of this treated water in the boilers gave satisfactory results; but if the water had not been properly treated, trouble from leaky tubes would have been experienced. This, in the opinion of some, no doubt would have been attributed to the use of the alkali, whereas the real trouble would be due to some of the acid remaining in the water and going into the boilers.

As another example of the use of acid water which gave no trouble after having been properly treated the following is given: Before treatment the water contained a total acidity as sulphuric acid of 461 parts per million. As can be seen, this was a very bad water, but after treatment it was used with good results.

A third example is the following: Untreated water, total acidity as H_2SO_4, 894 parts per million; total solids, 3655 parts per million.

This water, while very bad, was successfully treated with soda ash and no trouble from corrosion was experienced. The treatment required about 68 lb. of soda ash per 1000 gal., showing that the water finally contained a large amount of sodium salts.

When a water such as this must be used, blowing off of the boilers and cleaning as often as possible is a necessity. When the boilers are pushed too hard, and a water like that mentioned above is to be treated and used, foaming may occur, this condition being due to the large amount of dissolved salts in the water and to the overworking of the boilers. This will not, however, cause corrosion. As this article only intends to deal with the corrosion end of feed water, the foaming of waters will not be taken up.

To make the effect of acids and alkalies clearer to those who have any doubt about the corrosion of iron by soda ash, or caustic soda, the results of a few practical tests will be given. These tests were made on iron strips of the same constituents as that of which the boiler tubes are made.

Water No. 1

Carbon dioxide (CO_2)	2 parts per million
Calcium carbonate ($CaCO_3$)	5 parts per million
Methyl red	Alkaline

From this water there was a slight corrosion.

Water No. 2

Carbon dioxide (CO_2)	2 parts per million
Calcium carbonate ($CaCO_3$)	3 parts per million
Methyl red	Acid

From this water there was a pronounced corrosion of the iron.

Water No. 3 (treated with soda ash)

Sodium hydroxide (NaOH)	16- 4 parts per million
Sodium carbonate (Na_2CO_3)	784-85 parts per million
Methyl red	Alkaline

This water was noncorrosive.

Water No. 4 (treated with caustic soda)

Sodium hydroxide (NaOH)	424-92 parts per million
Sodium carbonate (Na_2CO_3)	424-11 parts per million

This water was noncorrosive.

Water No. 5 (treated with soda ash)

Sodium carbonate (Na_2CO_3)	11 parts per million
Sodium bicarbonate ($NaHCO_3$)	8 parts per million

This water, after a long test, showed but the faintest signs of corrosion; that is, it showed corrosion by giving it the benefit of the doubt.

This water, it might be said, was just about alkaline.

Water No. 6 (untreated)

Carbon dioxide (CO_2)	Trace
Calcium carbonate ($CaCO_3$)	5 parts per million
Methyl red	Alkaline

This water was corrosive, though only containing a trace of weak acids.

Water No. 7 (untreated)

Total acidity as sulphuric acid (H_2SO_4)	1,588 parts per million

This water resembles a mine water and had a most active reaction on the test piece.

From the foregoing tests, it can readily be seen that acidulous waters to be rendered noncorrosive must be treated with an alkali, and by using an alkali the waters will not have a corrosive effect on the tubes or on the shell of the boiler.

To those who do not use methyl red as an indicator in water purification work, I recommend its use for determining the nature of a water as far as corrosiveness is concerned. With this indicator one can learn whether there are acid salts in the water, which are highly corrosive agents, and which must be neutralized by an alkali.

Orient Mine Smashes All Records for an Eight-Hour Hoist

There is a race on between the American Coal Mining Co. at Bicknell, Ind., and the Chicago, Wilmington and Franklin Coal Co.'s Orient mine in Franklin County, Illinois, for the honor of making the largest hoist of coal in an eight-hour day. The last high record of the American mine was 6128 tons in eight hours, which is of course a wonderful record for a single-car self-dumping cage.

The Orient mine on Mar. 5 hoisted 6422.20 tons of coal in 1401 dumps. The hoisting time totaled 7½ hours, the approximate length of hoist being 570 ft. On Mar. 6 the same mine hoisted 6776.75 tons in 1502 dumps. The hoisting time was eight hours, only eight minutes being lost during the day.

During the month of February the Orient mine averaged over 5200 tons per working day. This mine also steadily increased its output during the war when other mines in the same field were losing tonnage due to labor shortage and other troubles. The operation is remarkably efficient and the fine results are due to the well-directed efforts of the management—G. B. Harrington, president; T. F. Holmes, general superintendent, and Joseph Louis, mine superintendent. Not the least factor in the record hoists is the splendid coöperation of the employees.

TO FACILITATE THE BURNING of the finer particles of anthracite coal and coke, mixtures of these fuels with bituminous coal have been tried. In this connection it has been found that non-coking bituminous coal is considerably inferior to the coking variety. The coking coal is better adapted to this use on account of the coal fusing at a comparatively low temperature; the particles of culm are taken up by the fusing coal and a homogeneous mass of fuel formed which burns uniformly. Tests show that a mixture containing 30 per cent. of culm, or coke, and 70 per cent. of coking bituminous coal produces the best results in burning.

Will Wages and Prices Remain Stable?

By Arthur F. Rice
Commissioner "Coal Merchants' Association, Inc."
Room 608, 90 West St., New York City

IN THE issue of *Coal Age* of Mar. 6 appeared an editorial entitled "A Clever Augur Can Find Whatever He Will." The writer of that editorial takes issue with me relative to my prophecy that there would be a reduction in the price of coal. As I had good reasons for the opinion I offered, I make the following statement, which explains why I have taken the stand which the editorial criticized.

First let me say that I prefaced the remarks to which the editorial refers by saying that he would be an optimistic man who expected these downward changes to take place at once. It is undoubtedly true that prices for the essentials of life must be lowered before there can be a substantial decrease in wages. I realize that when labor has made agreements with employers, those contracts must expire before new wage scales can be made effective. Employers must keep their promises even if labor does not.

We have seen an instance of the irresponsibility of labor in the boatmen's strike in New York harbor, where the men absolutely agreed to abide by the decision of the War Board and then coolly repudiated that contract. Such contract breaking does not in the long run help labor, and capital is not likely to imitate it. Even labor cannot continue to treat an agreement as binding when favorable and as a scrap of paper when unfavorable.

However, the anomaly of unemployment and contemporary high wages never had a long run. The law of supply and demand may not work quite so suddenly as the law of gravity, but it works just as surely, irrespective of what anybody wants or thinks.

For reasons which have seemed good and sufficient to the present administration in Washington, labor has had anything and everything it wanted; and there appears to be no present limit to this Government subservience. However, giving too much candy to children is likely to make them sick, and too lofty flights result in the most fatal falls. I fail to find in economic history any instance where, with two men for every job, one continued to get double pay while the other got nothing. Even unionized labor cannot lift itself over a fence by its boot straps.

When the editorial states that "prices of materials will not decline and wages will remain where they are," it expresses a conviction that is not borne out by the facts of commercial history; in fact, the prices of many commodities are already coming down—for instance, copper, which was selling at 26c. is now around 15c.; the other metals are on the same downward scale. To a huge surplus of wheat another tremendous crop is about to be added, and cold-storage warehouses are bursting with pork and beef. The only way to make money is to sell goods and produce more goods, and if the supply exceeds the demand, the remedy lies not in high prices but in lower prices, Mr. Hoover to the contrary notwithstanding. His prediction of $3.50 wheat is the "phantasmagoria of a diseased imagination." When you throw a stone out of the window and it goes up instead of down, you may then believe that prices in a heavy and glutted market will rise rather than fall. Anyhow, I will stake my judgment against that of the writer of the editorial that before the appearance of the April issue of *Coal Age* building materials and a lot of other commodities may be easily bought at lower prices than those prevailing today.

A reduction in living costs will render a reduction in wages logical even if not, at present, practicable; and a reduction in wages and materials which enter into the cost of producing coal would enable many an operator to make a profit where he now claims to be taking a loss. The editorial takes the ground that "it is just as well that the high level of wages remain stabilized," which necessarily implies that the high prices for coal shall also continue; but there I take direct issue, having in mind solely the good of the business itself for the immediate future.

Speaking of anthracite alone, and with especial reference to the steam sizes, the prices have been too high to enable this form of fuel to successfully compete with gas, electricity and soft coal, and they are too high here today, notwithstanding the fact that the retail dealers in New York, on the day after the Fuel Administration went out of business, reduced the prices on an average of 35c. a ton and now seriously contemplate making them lower. With gas at 80c. and gas stoves being practically given away, with the electric companies making a systematic (and successful) campaign to get their current into hotels and office buildings, and soft coal and coke in abundance at constantly falling prices, what can the ultimate outcome be, except a huge and permanent loss in anthracite tonnage? There is, in my estimation, but one way in which these tremendous inroads upon the business can be stopped, and that is by lowering the prices on anthracite steam coals, with the added proviso that their preparation be so improved that they may contain a lot more British thermal units and vastly less slate and dirt. The editorial says, "let us pin our faith on facts, not on visions"; and so say I. But let us be mighty sure about our facts! nor forget that a little "vision" and foresight are as essential in the coal business as in any other. A temporary loss of profits is bad enough, but the permanent loss of business is much more serious.

ANTHRACITE culm, slush or silt contains approximately 70 per cent. of combustible material. For some time experiments have been conducted by the large anthracite companies to reduce the impurities in this material to a point permitting of transporting it to a distance. Some of the devices employed in bituminous washeries have been successfully used in anthracite operations. Recently, concentrating tables such as are used in metal mining have been discussed and experiments are about to be tried as to their efficiency in the preparation of smaller anthracite sizes.

Extending the Coal Operator's Field for Profits

By George H. Cushing
Managing Director, American Wholesale Coal Association, Washington, D. C.

AN EDITOR of a daily paper overheard one of his reporters delivering an oration to his fellows. It was vigorous to the point of being vicious. He was overworked, he said, because the management was unfair. He pictured everything was going to the demnition bow-wows. At the conclusion of the diatribe, the editor said quietly:

"My boy, sometimes you talk as though you had a hair in your mouth."

Then he called the reporter into his office and said:

"I am glad to hear you talk that way. It doesn't prove, as you claim, that the paper is going down hill or that the management is bad. It merely proves that you have become discontented because you have outgrown your present job. It is time for me to give you a promotion."

Then he inquired patiently into the young man's ambitions. Before the week was ended, he had satisfied them. This is a true story. I know it is because I was the reporter.

The Coal Industry Wants a Change

The coal trade these days talks as though it had a hair in its mouth. It condemns everything which was, is, or is likely to be. It is not satisfied with anything. It wants a general change. According to the old editor's philosophy, that is a hopeful sign. It is an indication that the trade is dissatisfied because it has grown. It indicates that it needs a promotion. That being true, it is high time to discuss quietly the trade's ambitions to see whether they can be satisfied.

Frequently today one hears it said that coal should be under one control from the face to the smokestack. That is, the man who produces it should wholesale and retail it.

That is a good idea—if it can be carried out. It is a good idea because it rests on the theory that no industry is ever really profitable until it reinvests its money several times and, thereby, comes to get a profit on each process in the business.

To put it another way, it means that there should be a profit on mining, a profit on wholesaling and a profit on retailing. The operator, therefore, having made a profit on mining should reinvest it in wholesaling. When he has made a profit on both mining and wholesaling, he should reinvest it in retailing. Thus, in the end, he would come to have three separate profits on the original investment. In the end, therefore, he would have a business three times as profitable as it was in the first place, but without inviting any new capital into his enterprise.

You may multiply this process *ad libitum* by saying that the operator should also invest part of his profit in a coking plant. This starts another pyramid. That is, having a profit on mining and on coke making, he might reinvest that in the development of byproducts. This latter expansion can go on indefinitely.

The theory is perfectly sound because it has been worked out in other lines. That, in fact, is exactly the foundation of the fortune of John D. Rockefeller, who treated oil in that way and made therefrom America's greatest fortune.

It was precisely the same theory which constituted the foundation under the great department stores. Also, it is the foundation under the packing business. There is therefore no need to justify the theory. It is the established truth of business that the reinvestment of earnings assures larger earnings—if each department of the expanded business is independent of the basis department, and if each department makes a separate profit.

Before coal can launch successfully upon any such an expanding program, a few vital preliminaries must be attended to. The most important of these is to establish the essential distinctness of the operating functions, the wholesaling functions, the retailing functions. As a natural corollary, it must be recognized that since each has its separate capital, service and expense, there should be a profit commensurate thereto. We must come not only to the theory of three profits rather than one on the coal business. We must deliberately set out to make each department actually profitable. That is a condition precedent to the success of any such an expanding venture as the coal men now propose. In a word, the operator does not want to reinvest his mining profits in either wholesaling or retailing until those departments are profitable. To do so would be only to make money in one way to lose it in another. Thus, the best thing to do is to make these other departments profitable, to pave the way for a safe reinvestment of mining profits.

May Bite Off More Than It Can Chew

There is necessary another quite important preparation for any such an expanding program. Before the mines generally dare launch themselves upon any such an enterprise, they will want to be reasonably sure they can finish what they start. Otherwise they might find themselves in the position of the hopeful son who went forth one evening to propose marriage to a girl and took out a license first.

That is, if the operator is going into the wholesaling business, he must first make sure of enough tonnage to keep his wholesale organization busy. Along this line, I often recall the sound advice of a minister of the gospel, to wit:

"If you are thinking of marrying, there are three necessary preliminaries—good health, a visible means of support and a girl."

So, if the mines are to venture beyond the zone of production into wholesaling, they want to be sure that they have the tonnage, the money to finance the deal and the market.

Going back over the history of the trade, a few conspicuous cases will develop an important truth or two at which the coal trade has arrived as a result of broad experience.

At first the Pocahontas operations were small,

naturally. They could not sell their own coal so they entrusted the selling of it to a wholesale concern. After a while, it became apparent that the wholesale company was making more money from its efforts on all of the coal than was any producer from operating his mine. This didn't seem quite the thing to encourage.

In the meantime, each producing unit was growing. Some grew through natural expansion. Others through consolidations of individual mines into good sized companies. After a few years of that sort of thing, the operators decided to break away from the wholesaler. The enlarged mining companies decided to undertake the selling end of their business. Thereupon, they had the choice of two methods: They could buy out the merchandising concern; or, they could establish their own sales organization.

The decision along the latter line was made for two reasons: First, in a central selling syndicate supported by a number of mines which are financially independent of each other, it is hard to convince each operator that when business is poor the orders are being equitably distributed. Second, each company in that field had grown to a point where it produced a tonnage big enough to justify it in maintaining its own selling organization. The lessons learned by that experience are that small mines must depend on wholesalers. But they naturally break away so soon as they are independent of that agency which helped them to grow. This seems a harsh doctrine, but it is obviously the law of business.

Centralization of Sales and Distribution

Originally, as is commonly known, the mines now embraced in the Consolidation Coal Co. were controlled by a diversified ownership. Some mines were quite small and had to depend upon wholesale merchants for a market. Others were somewhat larger and were struggling to maintain their own sales organizations. It was decided, finally, to try to sell all of the Fairmont coal direct or without the aid of wholesale merchants. Thereupon arose the old question: "How can we centralize sales and satisfy the producers that orders are equitably distributed?"

The answer to that question was: "Consolidate the companies which control the mines and thereby get into one organization an annual tonnage big enough to support a separate selling organization."

This was done. After a little experience, the management learned two things which enabled it to adopt a distinctive policy for this concern. These two things were: First, the major portion of its tonnage was sold to the steam and gas trade. This coal had to be sold but once to put it into the hands of the ultimate consumer. There was little need—when the tonnage was large—to ask for help in selling this coal. Second, a very small percentage of the tonnage, relatively, was moving to the retail trade. And this coal was sold in such a restricted area, it justified that company in the ownership of retail yards. That is, only a few yards were needed to distribute this retail coal. Therefore, the producer's investment in retailing was not out of proportion to his business.

The lessons from this experience are: A central selling organization is safe when the mines which feed it are consolidated. A producer can safely retail his own coal when his tonnage in a given locality is large enough to support a retail yard.

The Pittsburgh Coal Co. is another example of the same kind of an experiment; and the development of its business has been along almost identically the same lines, with almost identical results. Two experiences are more convincing than one. But they become a safe criterion only to those facing similar situations—namely, a large volume of steam coal going to highly specialized use and a volume of retail coal moving into a few big centers.

A fourth and a far more complex example of direct selling comes in the case of the mines in Franklin County, Illinois. The area under development there is relatively small. At first the number of separately owned producing companies was relatively large. The coal from these mines was sold over eighteen states. On these various accounts, it was a financial impossibility for a single mine, with relatively a small tonnage, to sell its coal profitably at wholesale by its own agents over those eighteen states.

Even to think of each mine putting its own retail yard in each one of the cities in each one of those states to handle that coal was so far out of the question as never to have entered the mind of any producer. The investment in the requisite retail yards would have been immeasurably larger than the total investment of all mines in the producing district.

After about five years of discussion, however, it was finally decided to consolidate some of the mines in the Franklin County field. The result was one large company with a producing organization yielding a big enough tonnage to warrant it in wholesaling its own coal over its entire market. But even this experiment was not financially justified until competition had been limited by the sale of most of the other mines to concerns which had need for all the coal they could produce and which, accordingly, would have no commercial coal for sale.

An Instance Pertinent to the Discussion

This case is quite important to this discussion for this reason: This company has about 6,000,000 tons of coal per year to sell. It is making a success of selling it over eighteen states. That being true, the sweeping decision is likely to be that a company with a tonnage of 6,000,000 annually can safely decide to sell its own coal over all of its own market, no matter how big that market may be. Before any such sweeping decision is made, I advise the coal men to take seriously into account the fact that this producing company is fortunately situated in that its principal competitors have been absorbed by steel mills and other companies which use all the coal they can produce. The conditions are so unusual they are not a safe criterion.

Even when a company is so fortunately situated, it is a big question whether it can afford to venture into the retailing field to market its own coal to any great extent. It will be well to examine the figures.

For easy figuring, we will say that the production of that field is now 20,000,000 tons per year. We will assume—which is not the case—that that entire production is controlled by one selling organization. That would mean that there would be about 8,000,000 tons a year available for distribution through retail yards. If we say that this coal is sold over eighteen states and that there are fifty counties in each state, that would mean that the mining organization would be required to maintain 900 retail yards in order to have but one yard in each county. This would give to each retail yard, so owned, a tonnage of but 6666 per year.

However, one retail yard cannot distribute coal over an entire county and succeed in competition with the

dozens of yards located in that county. If it could, the equipment necessary could not be supported on a tonnage of 6666 per year of one grade of coal.

Clearly, therefore, the unit control of even such an important field as Franklin County, Illinois, cannot, on the tonnage it produces, maintain retail yards in all the enormous markets.

Identically the same thing is true of the smokeless field of West Virginia and of all other individual coal fields the product of which travels over an extensive area.

Going back over the rather large field covered by this inquiry, several conclusions are obvious, namely:

The desire of the coal producer to retain control of his product through the stages of wholesaling and retailing is a natural ambition. It is an ambition which is commercially sound because it conforms to the efforts which have brought success to business men in other lines.

Before, however, the operator can hope even to enter the wholesale field, he must have a tonnage big enough to support his sales force in a big market. And this tonnage is most safely provided when the producer controls financially the mines which feed the central sales organization.

If an effort is made to extend the enterprise of the producer into the field of retailing, it is obviously true that he must have enough tonnage to support his retail yard. Also, he must have in his tonnage enough of a variety of coal to appeal to the trade in that district.

But, even granting that these exacting conditions have been fulfilled, the operator is not even then warranted in venturing into these other fields of action until, first, the business of wholesaling and of retailing has been made reasonably profitable. If the operator ventures before this is done, he may awaken to the fact that he has reinvested the money made in producing coal only to lose it in his marketing ventures.

Clearly, then, this question is so big the coal man dare not decide what to do without careful inquiry. I am inclined to advise caution, without, of course, advising against the effort as a whole.

Legal Department

MINE LESSEE'S RIGHTS IN SURFACE—A clause in a mine lease entitling the lessee to make use of the surface in removing the coal, ventilating, etc., conferred the right to drill a hole ten inches in diameter to release explosive gases which had accumulated above the coal in place, and which could not be removed by ventilation, especially where the presence of the gases endangered the mine and the safety of miners working therein. (Pennsylvania Supreme Court, Oberly vs. H. C. Frick Coke Co., 104 Atlantic Reporter, 864.)

RIGHT TO FORFEIT COAL LEASE—Ordinarily, courts will not declare a forfeiture of a coal-mining lease for breach of its terms, where there is no provision in the lease for forfeiture and where the lessor has a remedy by suit for damages. So, where a lessee paid the minimum royalty specified in his contract, mere failure on his part to remove coal expeditiously was not ground for forfeiting the lease. Nor will the fact that a mine is not worked as skillfully as it might be sustain suit to forfeit the lessee's rights, no substantial damage being entailed against the lessor. (Kentucky Court of Appeals, Haden vs. Continental Fuel Co., 206 Southwestern Reporter, 8.)

COMPUTING AWARD UNDER COMPENSATION ACT—Where a miner, injured by a fall of rock, suffered a fracture of the base of his skull, resulting in impairment of his sight and hearing and in dizziness, headaches and general disability, with a probability of permanent inability to resume his occupation of mining, it was proper, in computing an award to be paid him under the Colorado Workmen's Compensation Act to allow him on the basis of at least a 25 per cent. permanent disability, subject to modification on proof of his physical improvement. (Colorado Supreme Court, Employers' Mutual Insurance Co. vs. Industrial Commission of Colorado, 176 Pacific Reporter, 314.)

VIOLATION OF RULES BY EMPLOYEES — A mining rule adopted by an operator for the safety of his employees is subject to waiver or abandonment when not a statutory regulation. But, in any event, a mine employee's violation of a rule forbidding riding on tramcars cannot be regarded as the cause of his injury, through wheels of a tramcar passing over his foot, when it appears that the operator of the train saw the injured man's position and caused the accident by a sudden and negligent acceleration of the movement of the cars. Nor does the fact that the injured employee attempted to board the train while it was moving bar his right to recover for any injury attributable to such unexpected negligence of the operator of the cars. (Alabama Supreme Court, Bearden vs. Sloss-Sheffield Steel and Iron Co., 80 Southern Reporter, 42.)

VENTILATION IN KENTUCKY MINES—The Kentucky statutes require that breakthroughs between entries be made air-tight, as far as practicable, by brattices or otherwise, so that the current of air in circulation in the mine may sweep to the interior of the excavations where miners are at work. Held, that where a place of work of a mine laborer had been driven more than 60 feet beyond a breakthrough, and two of four breakthroughs controlling the air current at that place had not been bratticed, and others were insufficiently bratticed, there was a violation of the law, making the operator liable for injury to such laborer, caused by collision with a machine truck due to a dense smoke obscuring his lamp from sight at a point more than eight feet away. (Kentucky Court of Appeals, Elam vs. Hazard Coal Co., 205 Southwestern Reporter, 945.)

ACCIDENT AS EVIDENCE OF NEGLIGENCE—The fact that a miner is injured through a fall of rock at his place of work is of itself insufficient to raise a presumption of actionable negligence on the part of the employing operator. When an operator has discharged all of his common-law and statutory obligations concerning the safety of his employees, the latter assume the risk of injuries incident to their work. The Indiana statute, which places the burden on the operator to prove that he did not know of a danger resulting in injury to a miner in time to have prevented it, is satisfied by showing that the danger arose in the course of the work, although that fact be developed by testimony of witnesses for plaintiff in an action brought to recover damages for the injury. (Indiana Supreme Court, Snapp vs. Steinbaugh, 121 Northeastern Reporter, 81.)

POWERS OF BANKS—The Montgomery Coal Co., a retail coal company, being insolvent and indebted to defendant bank, it was agreed between them that the bank should buy sufficient fuel to supply the company's trade; the company's president acting as the bank's agent in retailing the same, and the net proceeds being applied to the company's indebtedness to the bank. The plan was put into execution and plaintiff, another creditor of the coal company, levied on coal which had been so purchased by the bank, on the theory that it belonged to the debtor coal company. Held, that although the contract may have been invalid as providing for business transactions beyond the scope of those objects for which the bank was incorporated, still the title to coal purchased by the bank under the arrangement was its property, and not subject to seizure as property of the coal company. (Texas Court of Civil Appeals, Spadra-Clarksville Coal Co. vs. Security National Bank of Dallas, 206 Southwestern Reporter, 200.)

Coal Industry Can Make More Use of Trade Acceptances

The successful outcome of the negotiations looking to the financing of the railroads until the required appropriations are made by Congress makes it certain that there will be no unusual delay in the payment of the railroads' fuel bills. The possibility that some months would pass, during which no money could be paid on coal accounts, has brought clearly to the attention of operators the advantages of the use of the trade acceptance. The Federal Reserve Board, since its foundation, has been urging the more extended use of this kind of commercial paper. Since this class of paper is readily acceptable at the Federal Reserve banks, it is being urged that the coal trade can make more generous use of it.

Fuel Administration Actively Engaged on Statistical Work

No change will be made in the conduct of the Fuel Administration at the end of the coal year. It will run along as at present until July 1, it is expected. The work on records and statistics now constitutes the Administration's principal activity. Dr. Garfield continues to spend practically all of his time in Washington and will do so until after the Easter vacations, at which time it is understood he will give a larger portion of his time to his educational work.

New Railroad Appointees Meet with Approval of Coal Men

Announcement of the appointment of Swagar Sherley as director of the division of finance of the Railroad Administration meets with much favor among the representatives of the coal industry in Washington. Mr. Sherley is from a coal-producing state and, as chairman of the appropriations committee of the House of Representatives, has been in close touch with the public's viewpoint as to the railroad fuel question. It is regarded as highly improbable that Mr. Sherley will stand for a policy which will allow the railroads to foist a portion of their fuel bills onto other consumers. Mr. Sherley has represented the fifth Kentucky district in Congress since 1903.

Coal men generally, judging from advices reaching here, are convinced that John Skelton Williams, who has had charge of finance and purchases, was entirely out of sympathy with the principles advocated by coal producers in the matter of purchasing railroad fuel. His resignation came as a decided relief to the representatives in Washington of the coal industry who foresaw a continuance of difficult situations if Mr. Williams remained in office.

Under the new order, separate divisions have been created. Finance and Purchases each has a separate status. Henry B. Spencer is to head the Division of Purchases. He also is highly acceptable to the coal industry. He formerly was president of the Railway Fuel Co., which operated in Alabama. He has been in charge of the Railroad Administration's end of the conferences with the National Coal Association with regard to railroad fuel. He is given credit for having made possible the satisfactory results which came from those conferences.

Mr. Spencer is a native of Long Branch, N. J. He was graduated from Harvard University in 1895. Most of his career has been spent in the service of the Southern Railway. He rose from a humble position in the operating service of that system to be successively its general manager, vice-president and a member of its board of directors.

Demurrage Rates Cut by Federal Railroad Administration

A cut of $1 per day in demurrage rates and a recommendation to shippers to continue their shipments to the Tidewater Coal Exchange during March was the outcome of the first meeting held by the committee of operators, wholesalers, tradesmen and consumers appointed at the meeting held in Washington on Feb. 14, with the committee representing the Federal Railroad Administration. The meeting took place in Washington on Thursday of the last week in February and it was announced that the demurrage rates would be reduced from $3 to $2 per day for this month at the ports involved—New York, Philadelphia, Baltimore and Hampton Roads, and that it would be recommended that all shippers continue their shipments to the Tidewater Coal Exchange during the month. In the meantime further consideration will be given the matter, and it is expected another meeting of the joint committees will take place in March.

Consumption Records Prove of Value to Large Users of Coal

When the large consumers of coal first were called on by the Fuel Administration to make a return on the amount of coal being used, there was some protest. This was based principally on the assertion that it would be too difficult to keep account of the exact amount of coal burned. After having made the report for seven

months, however, many consumers have found the information of such value to themselves that they will continue to measure the coal burned. One of the largest consumers, in a recent letter to the Fuel Administration, says the cost and trouble of securing the information is negligible, when compared with the saving in fuel consumed. That company has ordered the report continued for its own use.

During the seven months that the consumers' reports were required, the cards containing the information, if piled in a single stack, would be twice the height of the Washington monument, one of the Administration's statisticians has calculated.

National Coal Association Sending Out a Questionnaire on Demurrage Rules

Announcement by the American Railroad Association that its national car demurrage rules are being revised has led the National Coal Association to send out a questionnaire through the local associations. Operators and others interested are asked to indicate whether they desire that the mine rating and car distribution rules of the Railroad Administration should apply during times of car surpluses, as well as during times of car shortage; whether demurrage should be assessed on unbilled loads held on mine tracks and whether they regard it as advisable for the National Coal Association to exert every effort to carry out their will in the foregoing propositions, even to the point of filing a complaint with the Interstate Commerce Commission.

Will Reduce Transportation Rates to Help American Foreign Trade

Exporters of coal soon are to enjoy much lower transportation rates. The cut is to apply to the rail haul to ports as well as to the ocean carriage. This is a part of a plan, affecting all exportable commodities, which is being perfected by the Railroad Administration and the United States Shipping Board to aid American industries to extend foreign trade. The reduced rates will apply to all the more important ports of the Atlantic, Gulf and Pacific. The State Department and the Department of Commerce are coöperating with the Railroad Administration and the Shipping Board to work out plans best suited to meeting foreign competition.

New Chairman of Mining Committee of House of Representatives

Mahlon M. Garland, who has been selected by the Republican Committee on Committees, to be chairman of the Mines and Mining Committee of the House of Representatives, has spent his entire life in close contact with the coal-mining industry in his native state of Pennsylvania. Through his association with labor movements he has been brought in frequent touch with other classes of mining. He is the ranking Republican member of the Committee on Mines and Mining and has taken part in the handling of bills pertaining to mining during the ten years he has been in Congress. Mr. Garland formerly was vice president of the American Federation of Labor. From 1892 to 1898 he was president of the Amalgamated Association of Iron, Steel and Tin Workers.

Anthracite Shipments for February

The anthracite shipments for February as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 3,871,932 tons, this being, with exception of the strike years, 1902, 1906 and 1912, the smallest in a period of eighteen years, or since December, 1901.

As compared with the preceding month, when the shipments were 5,934,241 tons, the shipments in February showed a decrease of a little over two million tons, while as compared with February of last year the shipments showed a decrease of 1,940,000 tons.

The very low record for February of this year may be attributed to the exceptionally mild weather which has prevailed during the entire winter. The shipments by companies were as follows:

	February, 1919	February, 1918	Coal Year, 1918–1919	Coal Year, 1917–1918
P. & R. Ry	725,809	1,107,982	13,359,828	13,459,445
L. V. R.R	643,551	1,042,784	12,586,368	12,865,850
C. R.R. of N. J	334,697	526,292	5,928,059	6,249,024
D. L. & W. R.R	597,604	997,550	10,233,528	11,372,936
D. & H. Co	629,929	600,799	8,162,731	7,892,860
Penna. R.R	277,031	459,271	4,755,812	5,123,695
Erie R.R	371,033	614,210	7,588,336	7,975,611
N. Y. O. & W. Ry	108,029	177,047	1,749,351	1,865,556
L. & N. E. R.R	188,249	286,147	3,384,836	3,670,561
Total	3,871,932	5,812,082	67,728,849	70,475,538

Will Take American People Twenty-Five Years to Pay Off War Debt

It will cost the American people about $1,200,000,000 a year for the next 25 years to pay off the war debt, according to estimates of the Treasury. The calculation is made on the assumption that the net war debt, with deductions for loans to the Allies, will be in the neighborhood of $18,000,000,000.

Interest on this amount, at the rate of 4¼ per cent., would be $765,000,000 a year, to be raised by taxes, and then repaid to bondholders. In addition, about $417,000,000 would have to be provided every year as a sinking fund to redeem all bonds in 25 years.

This would require a cumulative sinking fund provision of 2.32 per cent. Congress has not yet authorized establishment of a sinking fund as recommended by Secretary Glass.

New Chairman of Mining Committee House of Representatives

Of late there has been much interest manifested in the use of more up-to-date mining machinery in the coal mines of New Zealand in the interest of the health of the miners, since the dust evil was becoming quite a serious item and miners were objecting to work unless something was done to better the conditions.

The minister of mines agreed that everything possible should be done to minimize the loss of life, and it seems that something definite will be done to introduce the best up-to-date drilling machinery as well as other preventive means.

A special rock drill is now on trial in some of the mines, but as yet it has not proved satisfactory, but additional trials are to be made.

The coal mines of the country have been operated at fair profits during the past three years, but have fallen far short of supplying the demands of the Dominion.

Representatives of the coal trade in the Baltimore region are planning a banquet to be held about Mar. 21.

EDITORIALS

Touching Faith of Wage Reductionists

WITH accord of word and unison of voice the wage reductionists urge that wages must (and will) come down with prices. But if prices will not come down first, if prices depend on wages, which stay up, what happens then, wise wage reductionists? If wages and prices bow to one another and say, "After you, my dear Alphonse," nothing will be done to make either stoop to their lower level in 1914.

There are profiteering prices, of course, and these can be clipped; but large reductions cannot be looked for till wages have dropped. As long as Alphonse waits on Gaston, and Gaston on Alphonse, there will be nothing done. Why should either scramble through the scuttle-way at the bidding of the consumer?

GASTON (Prices) to Alphonse (Wages): After you, my dear Alphonse.
If they continue polite they will never re-enter the low portal of 1914.

As for the coal industry participating in a general reduction of prices and wages, it may be well to recall that the industry is now well organized. It seems quite possible that without violating any agreement the anthracite operators could make a new and lower contract as soon as the war is over; and it is certain that the bituminous operators could do so also—but what of it? They won't do it. The mine workers would not permit of it, to begin with. There is not enough labor, free of the unions, to make the unions consent to a reduction, and prices have not come down enough to justify such a lowering of wages.

Short-time work is sufficiently trying to the mine worker without having a short day-rate or a short tonnage schedule to make the sustenance of life impossible. For these and general reasons the operators are heartily out of accord, as far as all signs go, with the suggestion that they should cut hours and schedules at the same time. It is enough to strike down the mine worker with the club of short days. By all means, spare him a blow with the cudgel of short pay. He could hardly survive them both.

But some suggest that anthracite wages must come down before that fuel can hold its own in the market in competition with bituminous coal. In this regard the anthracite industry has occasionally had qualms of fear. As regards competition in small sizes that fear is now, as in all normal times, well justified; especially now that the consumers of bituminous coal have been emboldened by the recent laxity of municipal inspectors. These functionaries are not studying Ringelmann's charts with the old-time assiduity, to judge by the grayness of the skyline of most of our large cities. But now that anthracite is getting plentiful the public will begin to bring pressure for the use of smokeless coal or, at least, for the smokeless consumption of such coal as is naturally smoky.

Some anthracite operators are afraid also of coke, near-coke and gas, all of which are actively pushing, as the case may be, to a place, or a larger place, in the domestic trade. But all three are being made from bituminous coal, which has lately become increasingly expensive, and competition is consequently not so fierce as might be feared. The sale of coke and near-coke threatens the anthracite industry not more, but rather less, than before, because owing to the increase in wage rates bituminous coal has risen in price more than anthracite. As for gas, that has more nearly remained stationary; but the stability has been due largely to franchise restrictions and the control exercised by public-service commissions. Time will see a lifting of those conditions. Certainly the gas men are not advocating cheaper gas but trying to put the price higher in order to restore their failing dividends. If anthracite proves later in the year to be in short quantity, then there will be no reason for anthracite men to cut wages and reduce prices. If anthracite continues in excessive supply—the notion seems ridiculous—then the natural thing will be to keep the wage scale and shut down the unprofitable mines rather than award the mine worker low wages and short time.

As a rule wages fall first and prices afterward, or both fall together, for no considerable price reduction can come without a wage decrease, the profits in an industry being rarely comparable in any way with wages. This is why a wage increase in all the trades employed by an industry can almost never be absorbed by the industry without inevitable bankruptcy. Certain it is that most anthracite men, especially in the southern anthracite field, are not so placed that they can help in the general price reduction for which the wage reductionists so fervently pray and so confidently hope.

The automobilist, by the use of goggles, guards his eyes from dust. The miner has, so far, not seen fit to do so in his dusty work underground, though the occasion is at least equal. Such goggles should be fitted so as to help vision and should only be of plain glass when protecting perfectly normal eyes. Many a short- or long-sighted man who would wear such prescribed goggles would never thereafter go back to a life made burdensome by the deficiencies of his unaided vision.

Mine Inspectors' Institute of the United States of America

AT THE close of the Joplin (Mo.) annual meeting of the Mine Inspectors' Institute, June 13-15, 1916, it was decided to hold the next meeting, which would be the decennial meeting of the Institute, at the place of its organization (June, 1908), Indianapolis, Ind. The constitution was amended, making the time for holding the annual meeting, thereafter, the second Tuesday in July, instead of the second Tuesday in June, as previously.

Before the time arrived for holding that meeting, however, the imminent prospect of this country entering the European war decided the Executive Committee of the Institute to postpone further meetings until conditions resumed a more nearly normal state and the duties of mine inspectors would permit of their temporary absence from home.

July of the following year (1918) afforded no improvement, and the increase in war activities left no opportunity for inspectors of mines to get away, if it was only for a day. The urgent demand for an increased production of coal, together with the employment of many unacquainted with mining conditions, required the constant watchcare of every inspector.

The war is now over and conditions in the mines are rapidly assuming their normal aspect. The year 1919 should find the mine inspectors from every state and the provinces of Canada gather in July at the old stamping ground, in Indianapolis, to greet each other and confer on the many questions of growing importance in the coal industry.

There have been many changes in the mine inspection departments of the different states, and inspectors who are not already members of the organization should address the secretary, James W. Paul, Bureau of Mines, Pittsburgh, Penn., for application blanks. On request, *Coal Age* will send copies of the last report of the Institute, gratis. Let every member take an active interest in securing new members, and making certain his own presence at Indianapolis July 8-11, 1919. Let every state department and governor see that delegates from their own states are in attendance.

When technical men are gathered together, a so-called practical man usually wanders in and has something true, but uncharitable, to say about engineers' estimates, from which it appears that the engineer knows as little about costs of construction as the practical man knows about costs of production; and that an engineer's forecast is as defective as the operator's vision of what is right before his eyes.

The New England Problem

NEW ENGLAND, because of its geographical position and concentrated business activity, has always been the greatest problem of the coal industry. To keep this small but highly congested industrial section adequately supplied with fuel throughout the whole twelve months, even to the detriment of the just and deserving demands of other parts of the country, has been particularly trying during the past few years. It not only worried the Administration quite a little last winter, but threatened to become a most serious problem of national significance. Fortunately it was overcome before the deluge came.

Roughly estimated, New England consumes thirty million tons of coal annually, one-third of which comes all-rail and the rest by tidewater. It is a physical impossibility to increase the rail shipments by any substantial amounts, so any increased tonnage must be supplied by the water route. While it is true that New England enters this year with a larger stock on hand, perhaps, than any year before in her history, it is also true that the current receipts of both rail coal and tide, particularly the latter, have been so far below normal the past three months that the one condition is offset by the other. Should the current receipts keep falling below the usual monthly quota a few months more—and all indications point that way—the problem of furnishing New England with her adequate supply of coal will again become one of serious consideration.

The problem will probably be of a more local nature this time, because the crux of the matter lies in the discharging facilities of the New England ports and not because of a possible shortage of coal or ships. There is a maximum limit to the tonnage that can be discharged at these ports, and while their present facilities are such that twenty million tons of coal can readily be handled, the task can only be accomplished by being spread evenly over the entire year. The job cannot be done in a few months, or six, or even more perhaps. Trying to do so last year showed plainly that it was not feasible or wise. Had New England industries been actually dependent upon the current requirements they then claimed were needed to keep running, and had not had on hand stocks of coal which were measured through the wrong end of a telescope, this impossibility would have been more clearly and painfully demonstrated.

As seems quite natural, New England consumers have been holding off in their buying of coal in the expectation that coal prices and water freights would be reduced. Meantime they are making all efforts to use up what poor coal they had left in their stock piles. While this is quite a logical procedure, it nevertheless has upset the regular clockwork-like arrangement by which New England is harmoniously supplied with fuel. The machinery has been thrown out of gear, and trouble, more or less serious, is bound to come of it. It is unlikely that the rest of the country will also suffer with New England in her possible difficulties this year, providing the other sections will not carry the "watchful waiting" policy too far also, although there may be a temporary interference in the regular flow of coal.

Of more than passing interest, therefore, will be the attitude New England consumers manifest during the next two months toward replenishing their diminishing stock piles and in preparing for the coming winter.

Governor Sproul of Pennsylvania says that after a mild winter, like that just experienced, the prices of anthracite should not be increased. The public, in general, when worried by the large coal bills of arctic winters, says anthracite should not go up in price when the demand for it makes such a large consumption of that fuel necessary. Any reason is enough as basis for the contention that anthracite should be sold below cost, and it will satisfy almost any one but the anthracite producers and those few old-fashioned people who still hanker after justice for everyone.

THE LABOR SITUATION

General Labor Review

Lacking steady work, all kinds of evils arise to trouble the waters, and the only way to cure them is to remove the source and not to apply emollients of doubtful value. When once we again get a demand for coal the problem of keeping idle miners at work will be solved. Let the operator keep this fact in mind. He is apt to think that his chief hope is in parsimony, in restricting tax levies and in preaching caution. It is not so. His hope lies not there, but in encouraging national expenditure, and in inducing states and municipalities to expend money in permanent improvements. Then the wheels will turn and the very heat of the mechanism will keep it from freezing, and its very movement will prevent it from corroding.

Always the basal infirmity is the one to be corrected. Medicine is forever alleviating the symptom and overlooking the real cause of ailment. Our policy at the mines is the same. The six-hour day can be met only by offering the possibility of steady work with the eight-hour day and we can only do this by proper political action.

Our cartoonist has produced this week a poster of merit, but it is clear that the workman will say that for six hours he should demand the pay granted for eight. That being allowed to the workman, the price of everything would go up 33 per cent. It is difficult for any one to understand that a defense taken by one man becomes no defense if used by all. The gas attack helped the Germans till the Allies used it. The six-hour day will help the mine worker admirably till the shoemaker, the baker and the butcher use it.

Hence it is that a six-hour day is to be combated. The workman wants his standard of living maintained and will make trouble if he does not get it. The only way he can make that standard possible is by working a full day. It would be a wrong to let him reduce the means by which alone his standard of living can be maintained.

Umpire Neill Delivers Two Decisions

Charles P. Neill, the umpire of the Anthracite Conciliation Board, has given two decisions, one recognizing the rights of the employers and another the rights of the employees. The engineers, firemen and cranesmen, engaged on the steam shovels in the Jeddo stripping, of the G. B. Markle Co., believed themselves to be of such a class as to be entitled to the eight-hour day with a three per cent. increase. They had been given by the company a flat seven per cent. increase on the basis of a nine-hour day. The shorter day, though accompanied by a smaller increase in wage, made the wage increase per hour 16 per cent. instead of seven per cent., which would be all they would get if nine hours constituted a day's work.

The change is a basal one. The revisions made recently do not modify it. It modifies the wage schedule way back to May 5, 1916, and being retroactive will provide for a payment of thousands of dollars. The decision was made on March 11.

The decision which has been mentioned as made against the employees was rendered in reference to the operation of the Dunmore vein at the Diamond Colliery of the Delaware, Lackawanna, and Western R.R., Coal Department. The gangway miners declared that the charge for lifting bottom rock was $3.60 per lineal yard regardless of its thickness. This rock usually runs from 44 to 48 in. thick. The company contended that the rate was eight cents per inch, the $3.60 being evidently based on a thickness of 45 inches.

Glen White Shooting Affray in Court

A crowd that taxed the capacity of the circuit court room in Beckley, W. Va., was present Mar. 8 for the hearing then to be given the twelve men charged with complicity in the Glen White shooting affray. Just as the stage was set to proceed with the inquiry, attorneys of the accused men announced that their clients would waive examination, and all were placed under bond to appear at the next term of criminal court.

The men under arrest are James R. Gilmore, president of the United Mine Workers of District No. 29; Lawrence Dwyer, international board member; Obe Clendenin and Toney Stafford, district board members; Ed. Snyder, Toney Sarazzo, Will Owen, Tom Murphy, George Lucas, Tom McGinnis, Dorr Snuffer, and Tom Lethco.

All are charged with complicity in a shooting affray that took place at Glen White on Nov. 16, 1917, at a time when there was trouble between the E. E. White Coal Co. and a part of its working force. Eight of the twelve accused men are alleged to have been active participants in the shooting and the other four—Gilmore, Dwyer, Clendenin and Snyder—are held as accessories before the act.

Increase Is Not Based on Quality of Work

Special Umpire Allison O. Smith, of Clearfield, Penn., sitting in Charleston as a judge of disputes between the miners and operators of the New River and Winding Gulf fields, has handed down decisions in three cases which will be of much interest to the operators in those districts. Two of the decisions sustained the contentions of the men and the third was favorable to the operators.

The first decision was in the case of B. F. Tarleton vs. the New River Coal Co. The facts brought out in this case were that Tarleton accepted work at the Summerlee mine as engineer in the month of May, 1918. He was paid $105 per month, which he claimed was not the proper wage for that job. He based his contention on the fact that the man who was performing that work during October, 1917, was paid $85 per month. The Washington award of $1.40 per day would make the proper wage for that employment for the months that had 30 days, $127.00, and for the months that had 31 days, $128.40. For this reason Tarleton asked that the company be directed to pay him the shortage in his pay envelope during the whole period of his employment.

The judge's decision sustained Tarleton's claim, and ordered that he be paid the difference between the $105.00 and $127.00 or $128.40 per month for which the contract called. The judge remarked that the advance figured out in the production of coal was figured at what the job was paid prior to the granting of the advance. Therefore, it was his decision that, as long as the operating company received the extra 45c. in the selling price of coal, it should pay the advances that the increase was based on.

In the case of Warren Sizemore vs. the Coal Run mine, Sizemore claimed he was discriminated against and discharged for belonging to the union, and he asked that he be compensated for 18 days, the time he was idle on account of his discharge. Judge Smith sustained this claim and directed that the company pay Sizemore for the 18 days' idleness at the rate of $4 per day.

In a car-pushing case the judge's decision sustained the operators. A voluminous amount of evidence was presented by both sides, the operators contending that the 10c. differential paid in the mines on the New River was paid to the men to compensate for car pushing, while the miners contended that it was paid on account of the low coal.

The judge pointed out that the evidence of both the miners and operators was that this 10c. was given years ago. Though the miners testified that it was their understanding that it was paid on account of the lowness of the coal, but none of them could give positive evidence.

On the other hand the operators presented the evidence of Mr. Beury and Mr. Caperton, who had been operating coal at the time. They were able to testify that they knew just why the differential was granted.

Judge Smith ordered that this decision should in no way change any of the present customs throughout the field, that where men are paid for the pushing of cars or tracklaying they shall continue to be paid; and that in cases where the pushing of cars over long distances or over extra steep grades is necessary, the miners have the right to take such cases up as grievances.

British Columbian Miners Exhibit Excellent Judgment

One of the important questions discussed at the recent annual convention of District 18, United Mine Workers of America, was the renewal of agreements. One of these, that between the miners and the management of the Crow's Nest Pass Coal Co., Fernie, B. C., being due to expire on Mar. 31. It was announced, in this connection, that a policy committee meeting would be held at Indianapolis on Mar. 18, which would be attended by representatives of all districts. It was decided, therefore, that the operators should be approached with a view to arranging for an extension of the present contract, modified, of course, as has recently been provided, by the awards of the commission on cost of living. This was agreed upon in order that the demands of District 18 could be made to conform, in some degree, with those of the miners of the United States and possibly those of Great Britain. Representatives appointed to represent the district at this meeting are: P. M. Christopher, district president; Robert Livett, international board member; Frank Wheatley and Alex. Susnar. International Organizer David Rees also will attend. These delegates were instructed to indorse the proposals contained in a circular by Frank Farrington, president of the Illinois miners, for a six-hour day and a five-day week.

In the conference with the operators, which took place subsequently, Fuel Director W. H. Armstrong presided and the utmost good feeling prevailed. The operators agreed to postpone negotiations pending the meeting of the policy committee, and a further meeting with the operators is to be arranged as soon as possible after the return of the District 18 representatives.

Two noteworthy changes made in the constitution of District 18 by the Convention were that conventions and elections of officers should be held biennially instead of annually.

Mine Workers Attack Girard Royalties

The mine workers in the anthracite region are getting official recognition of their attacks on the operators' practice of closing mines which are not being profitably operated. Their executive board in the Hazelton district has decided to make a request for a tridistrict convention of the men of the anthracite field. This meeting is to be held, if the board gets its way, about the middle of August.

It will frame new demands to be presented to the anthracite operators when the basic agreement expires in April, 1920, till which time the mine workers are not at liberty to change the scale, though it would appear that the operators could change it, if they would, at any time after the signing of the peace without becoming subject to a charge of violating their agreement.

However, everybody concedes that the scale will remain unchanged till April, 1920, when the mine workers will probably make some demands, if the will of the international convention that will meet in September of this year is favorable to changes. Among the demands will possibly be the one just mentioned. The shutting down of unprofitable mines has been quite a general practice of late, and the dispossessed mine workers are determined that the equal turn shall apply not only as to single mines but as to all the mines of one company. The desired rule is not to be commended on general principles. The nation is not helped by the operation of inefficient mines.

The required output should come by working briskly the most suitable mines having regard to ease of working, quality of coal and propinquity to market. The Kansas men have sought in the past a like restriction of the option to close unprofitable mines. The idea is, therefore, not new. In fact the anthracite miner has less to complain about than some other mine workers, for in other states work is far less steady, there is less other work, and, the mines being further apart, moving is more of a problem and commuting to work not possible.

No one can help, however, growing a little angry about the predicament of the mine workers of the Lehigh Valley Coal Co. who are laid idle by reason of the high royalties charged by the Stephen Girard Estate. Strange to say the trustees of that estate do not seem to realize how improper are the charges they are making for coal in the bed. One trustee actually ventured some time ago to criticize the conduct of the anthracite operators and question their prices. His criticisms furnished the basis for an informal indictment of the anthracite industry made a few years ago in the Brooklyn City Hall.

The royalty collectors have an air of self-satisfied pride when they point to the profits, real and imaginary, in coal mining, but for this there is no justification whatever, the holding of coal land being of no benefit to the public, whereas the mining of coal is of benefit, yet in the anthracite region the holding of coal has been the source of larger profit. The mine workers are not without knowledge of the true conditions, and, on Mar. 13, the mine workers' officials made the following statement:

"We find that the Girard estate is more responsible for the shutdown than the coal company, for the high cost of the coal at the mines shut down is due to the large royalty charged the Lehigh Valley and to other coal companies operating colleries on the estate. We are reliably informed that the estate is charging a royalty of from $1.05 to $1.22 per ton on all sizes of coal, and that it has a sliding scale which is raised according to the price at which the coal is sold.

"From the rich fields of coal in Schuylkill County the estate has reaped a great harvest of wealth in the obtaining of which the poor miner has been hardly dealt with. The miners have had their homes badly damaged by the mine operations. These homes have, in many cases, been made untenable. Miners have labored all their lives to develop the rich deposits on the estate, the wealth of which is spent in Philadelphia and other places. Little consideration has been shown to the poor mine worker who has produced enormous wealth for this heartless estate.

"In the opinion of the miners, Stephen Girard never intended in his will to discriminate in such a manner against the producer of the valuable mineral on his estate, the value of which he did not realize though he commenced to mine it before he died.

"We would ask the State Legislature to take notice of the conduct and management of this estate, and look into this matter of big royalties which prevent tenants from working steadily and have caused a general shutdown in part of the anthracite region, causing suffering to thousands of mine workers and their families."

A complete tie-up of all mines of the Delaware, Lackawanna & Western R.R. Co. Coal Department is threatened unless the company agrees to the demands of the miners for a more equitable distribution of work at its collieries. If the demands of the men are not granted more than ten thousand mine workers may strike.

Some weeks ago the D. L. & W. R.R. Co. shut down several mines because of there being no demand for coal, and thousands of men were thrown out of work. Those who are idle claim that the company is hiring men from outside districts to operate the mines that are working and is refusing to hire men who are out of work as a result of the shutdown.

Sure, the Full Day and the Whole Dollar Have Always Been Friends

A Short Day Means a Short Dollar

What we don't dig out of the ground or manufacture we'll never have. That's a cinch. We're having short running time this year and it's going to cut in on our comforts. We all know that short running time makes hard sledding for the miner. A short working day, as a permanent institution for everybody everywhere, would do the same for everybody and for ever unless we could somehow contrive to do as much in the short day as we have been in the habit of doing in the long day.

DISCUSSION BY READERS

Waste of Coal

Letter No. 3—I was glad to read the letter of Russell Exline, *Coal Age*, Dec. 26, p. 1176, which drew my attention to a previous article that I had missed and which showed that the annual waste of coal, in this country, was equal to a solid cube 1785 ft. on a side and containing 150,000,000 tons. It was not stated whether this waste occurs in the mine or after the coal is taken to the surface.

However, let me ask, Does it ever occur to coal operators how much coal is wasted and lost beyond recovery in their mines? An operator buys or leases a tract of land, in the latter case paying the owner a fixed price per ton of coal mined and brought to the surface. In either case, the cheapest coal is extracted first, and that which can only be secured at a much higher cost is left and, perhaps, never recovered.

If my information is correct it is not the custom, in the British Isles, to lease coal land at an agreed price per ton of coal mined. The prevailing custom is to lease a tract of land on the basis of an estimated tonnage, per foot-acre, which required the operator to pay a fixed price for the coal whether or not the estimated tonnage was mined.

Much waste occurs by reason of the method of mining adopted. Longwall mining involves a less loss of coal than any other method and affords good ventilation at the working face. There are no pillars to be drawn, all the coal being taken out in the first working. I recall an instance of my boyhood, in Scotland, where a coal seam 5 ft. in thickness was worked by longwall and the operator was obliged to secure sandstone rock from a near-by quarry, for the purpose of building the packwalls in the mine. The rock was sent down into the mine every night.

In many coal mines, today, coal is blasted off the solid and it is safe to say that a considerable percentage of this coal is thrown into the gob and lost. The practice is both dangerous to life and wasteful and should be prohibited by a law that would require every shot to be undermined before the coal is blasted.

Wasteful Methods in Machine Mining

Where the coal is mined by machines, more or less of it is wasted, according to the type of machine employed. When the mining is done in the clay underlying the coal, which is usually the case where the puncher type of coal cutter is used, very little of the coal is wasted. The puncher machine is mostly operated by air and, in that event, has the advantage over electric coal cutters for working wet places going to the dip. When such places are worked with electric machines, it is often necessary to leave several inches of coal on the bottom.

It is customary for a superintendent, in placing an order for electric coal cutters, to specify that they must cut coal 4 in. or less from the bottom. In some cases, the cut is made higher up in the seam and the bottom coal is then lifted later, the machineman paying the digger for that work. With some types of electric chain cutters, it takes an expert machine runner to cut the coal less than 4 in. from the bottom. It can be done with the ironclad Sullivan machine, but it takes time and is a disadvantage where the machinemen are paid by the ton.

Machine runners seldom stop to consider how much coal is wasted when 4 or 5 in. of bottom coal is left, in cutting a room 25 ft. wide and 300 ft. long. Taking the weight of the coal as 80 lb. per cu.ft., the amount of coal left in 4 in. of bottom is $\frac{1}{3}(300 \times 25)80 \div 2000 = 100$ tons. The loss of 4 in. of bottom coal, in mining out 1 sq.mi., would mean the loss of over 370,000 tons.

Again, when pillars are being drawn, miners are frequently allowed to take a skip off the rib, with the result that a cave occurs that overrides much of the pillars still remaining, and it is not uncommon for 100 or 200 tons of coal to be thus lost in a single pillar.

Pillars should always be drawn with a straight face across the pillar, at right angles to the track, so that the break will not injure the pillar by causing the pressure to override and crush the coal remaining. Pillar coal is often lost by reason of timbers left standing in the gob, which prevents the settlement of the roof and throws the weight forward on the pillar.

Notwithstanding the fact that there is sufficient coal in the United States to last for two or three thousand years, it is a shame to see the unwarranted waste that occurs in the mining of coal today. The time will come when coal will be scarce and difficult to mine. Let us strive to conserve this natural supply of fuel.

———, Colo. FOREMAN.

Firebosses as State Officials

Letter No. 1—In arguing the question of attaining the highest efficiency in firebossing, recently, it has been claimed that this can be best attained by placing the fireboss under the jurisdiction of the state. I am not in favor of firebosses being employed by the state; nor do I think that they should be considered in any other capacity than that of a *mine examiner*, whose duty is not only to examine the mine for gas but to discover any other dangers that may arise on the roads, travelingways or working places of the mine.

Miners are exposed to a great variety of dangers, many of which require constant watch and a very close inspection, in order to detect them before an accident occurs. If we are anxious to protect the lives of miners and make the mining of coal more safe a law should be enacted in every coal-producing state that would make it necessary for each mine to employ one or more local mine examiners.

These men should be in the mine during the entire day and devote their time to a close inspection of each working place and give such instructions to the men as would make their work more safe. It is my belief

that many men are killed every day, in coal mines, because of lack of proper instruction in regard to safe methods of performing their work.

Speaking of the employment of firebosses, by the state, I fail to see what benefit would arise by so doing. It has been suggested that when acting under state authority, the fireboss would be held in higher regard by the mine foreman who would fear to go contrary to his orders or to operate the mine in any way that would not comply with the state mining law. My own idea, in this respect, is that it would make little difference with the mine foreman, except to increase his dislike of being compelled to obey the orders of the fireboss, and the natural result would be that many foremen would be disposed to make life miserable for the fireboss, by entering complaints against him to the deputy mine inspector, who would be compelled to make constant investigations to ascertain the true situation of affairs in the mine.

The employment of firebosses by the state would, in my opinion, be very apt to raise some questions in regard to the liability of the state in the compensation for accidents occurring in mines. It would certainly have a tendency to raise the standard of qualifications for the position of fireboss. That being the case, many of the men now holding that position would be found incompetent and their certificates revoked.

Taking everything into consideration, therefore, it is my belief that the opinion of the large majority of practical mining men who have held positions as fireboss, assistant foreman and foreman, in coal mines, if candidly expressed, would be opposed to the suggestion of the employment of firebosses by the state. Let us hear what arguments can be advanced for and against this proposition. ROBERT A. MARSHALL.

Farr, Colo.

Engine-Plane Haulage

Letter No. 1—Kindly permit me to suggest two solutions to the engine-plane problem presented in *Coal Age*, Feb. 6, p. 293. As there explained, an incline 400 ft. long and having a grade of 25 per cent. leads from the tipple to a point in the mine entry where the grade suddenly changes to 1½ per cent. and continues at that for a distance of 1000 ft., to the inside parting where the trips are made up to be hauled out of the mine.

My first suggestion, however, will not be practicable, unless the output of the mine exceeds 500 tons per day, as the expense would hardly be warranted for a less tonnage. It is to construct a trestle and drive a new slope leading from the tipple to the side track in the mine and having a uniform grade throughout. But, for the reason just stated, we will leave this suggestion without further remark.

My second suggestion assumes that no change is to be made in the grades given. My plan, now, would be to estimate on a tonnage 50 per cent. greater than that stated, or say 750 tons per day, which will provide against all contingencies. In order to haul longer trips at a reasonably low speed, I would use a duplex second-motion engine, geared about 4 to 1. By the use of the common formulas, I would calculate the size of engine required to haul loaded trips of 10 cars each, basing this calculation on the maximum grade of 25 per cent., or an inclination of about 14 degrees.

The weight of coal hauled in a single trip is $10(5000 - 1500) \div 2000 = 17.5$ tons, and to put out 750 tons in a day of 8 hours will require $750 \div 17.5 =$ say 43 trips. The time of making one round trip is, therefore, $(8 \times 60) \div 43 = 11.16$ min. Then, allowing 2 min. for changing ropes at each end gives for the actual running time slightly more than 7 min. The total distance covered in this time is $2 \times 1400 = 2800$ ft., which makes the average speed of hauling $2800 \div 7 = 400$ ft. per minute.

In practice, the speed of hauling would be somewhat greater than the average on the lesser grade and considerably less when hauling up the incline. Thus, on the 1½ per cent. grade, the speed of hauling might vary from 500 to 600 ft. per min., while on the incline it might average 250 ft. per minute.

Suggests Installing a Tail-Rope System

Allow me to suggest, here, that a modified tail-rope system of haulage strikes me as being best adapted to the conditions in this mine. For example, I would use a ¾-in., crucible-steel wire rope for both the main and tail rope. This rope will weigh 0.88 lb. per ft. Starting from the side track in the mine, the main rope hauls the loaded trip out to the foot of the incline, dragging behind it the tail rope, which is attached to the rear end of the trip. At the foot of the incline the tail rope is detached from the trip and left lying in the road, while the main rope pulls the trip up the incline. The weight of the rope resting on the incline is $400 \times 0.88 = 352$ lb., while the weight of the loaded trip is $10 \times 5000 = 50{,}000$ lb., which makes the total moving load when the trip is at the foot of the incline 50,352 pounds.

Now, for a 25 per cent. grade, the sine of the angle of inclination is 0.24249 and the cosine, 0.97015. Then, assuming a track resistance of 20 lb. per ton, the total load on the rope at the head of the incline when a loaded trip is starting to ascend is

$$L = 50{,}352\left(0.24249 + \frac{0.97015}{100}\right) = \text{say } 13{,}000\ lb.$$

Finally, estimating the power of the engine that will haul this load at the average speed previously calculated, we have, allowing 80 per cent. as the efficiency of the engine,

$$H = \frac{13{,}000 \times 400}{0.80 \times 33{,}000} = \text{say } 200\ hp.$$

Returning, when the empty trip has been lowered to the foot of the incline, the tail rope lying there is attached to the head end of the trip and assists in pulling the empties back into the mine. Let me say, here, that in making such estimates it is always a good plan to submit the proposition to manufacturers of haulage and hoisting equipment in mines and receive from them their bids on plans that they consider adapted to meet the requirements. STEVE GOSNELL.

Hallidayboro, Ill.

Letter No. 2—Interest has been aroused here by the inquiry of W. M. Q., *Coal Age*, Feb. 6, p. 293, regarding a proposed engine-plane haulage combining a 25 per cent. grade 400 ft. long, which was followed by 1000 ft. of a 1½ per cent. grade. In addition to what has already been said in reply to this inquiry, I would like to add a few comments and offer some figures that may be of interest to this correspondent.

In the first place, in order to provide an output of 500 tons of coal per day of 8 hours, as desired, and hauling three-car trips, having a total capacity of $3(5000 - 1500) \div 2000 = 5¼$ tons, I find that it

would be necessary to haul at a speed of 8 miles per hour, in order to allow 4 min. For making each round trip, with 1 min. to spare for changing ropes, assuming another trip of loads or empties is ready on the arrival of each successive trip on the tipple or in the mine. This is assuming, as was previously estimated, that there will be $500 \div 5\frac{1}{4} = 95$ trips a day, or say a trip each 5 min.

Allowing such arrangement to be possible, for the sake of argument, the question then resolves itself into whether or not the empty trip will pull the rope back to the bottom, at the estimated speed of 8 miles per hour. Neglecting the weight of the rope, that of the empty trip is $3 \times 1500 = 4500$ lb. A speed of 8 miles per hour is $(8 \times 5280) \div 3600 = 11.7$ ft. per second. Moving at this speed, the empty trip would have a kinetic energy of $(4500 \times 11.7^2) \div 2 \times 32.16 = 9577$ ft.-lb.

Now, in order to simplify the calculation, let me assume that a $1\frac{1}{2}$ per cent. grade is just sufficient to overcome the track resistance, which will permit the entire kinetic energy to be applied in pulling the rope attached to the end of the empty trip. I will further assume that the 400 ft. of rope lying on the incline will gravitate easily under its own weight and still have sufficient reserve force to unwind the rope from the drum.

There will then be an average length of 500 ft. to be pulled a distance of 1000 ft., on the lower grade, by the kinetic energy of the empty trip. The weight of this average length of rope, previously estimated as 0.39 lb. per foot., is $500 \times 0.39 = 195$ lb.; and, taking the rope friction as 1/40 of its weight, the work performed in pulling the rope 1000 ft., on the $1\frac{1}{2}$ per cent. grade, will be $1000(195 \div 40) = 4875$ ft.-lb.

Now, taking the assumed data as more or less closely approximating the fact, it appears that it will be possible for the empty trip to gravitate the entire distance of 1000 ft., from the foot of the incline to the side track in the mine, and drag the rope behind it, while maintaining the estimated speed of 8 miles per hour.

However, allow me to suggest that, in order to provide against all contingencies, particularly the necessity of stopping the trip at some point on the lower grade, before it has reached the side track at the end of the haul, it would seem advisable to adopt some type of tail-rope haulage by which the empty trip could be pulled back into the mine, instead of relying wholly on the proposed engine-plane system.

It should be observed, here, that the assumed speed of hauling (8 miles per hour) is greater than what can be safely estimated, under the conditions presented in this inquiry. Also, the time allowed for changing ropes being 1 min. for each round trip, or $\frac{1}{2}$ min. at each end of the haul, is hardly sufficient and provides no margin for delays that may, and invariably do, occur in mining practice.

Moreover, if the cars must be dumped and returned at once into the mine, it will be necessary to provide a rotary dump of three cars' capacity, into which the trip can be hauled without removing the rope. Such an arrangement will permit the three cars to be dumped at once and returned promptly into the mine.

Pittsburgh, Penn. SHELDON SMILLIE.

In connection with the above estimate, it may be well to draw attention to the high speed with which the empty trip would reach the foot of the incline if unrestrained by a brake applied to the drum. Starting from rest at the head of the incline and ignoring the weight of the rope, that of the empty trip being 4500 lb.; and, further, assuming the track resistance as, say, 20 lb. per ton, the velocity attained at the foot of the incline would be

$$v = \sqrt{2gs\left(\sin a - \frac{\cos a}{100}\right)}$$

$$= \sqrt{2 \times 32.16 \times 400\left(0.24249 - \frac{0.97015}{100}\right)}$$

$$= \sqrt{25{,}728(0.23279)} = 77.4 \text{ ft. per sec.}$$

This would mean a speed of $(77.4 \times 3600) \div 5280 = 52.7$ miles per hour. The chief difficulty on this first steep grade is, therefore, to hold the descending cars in check by means of a good brake on the drum.

Attention should also be drawn to the manner of computing the result of applying the stored energy of the empty trip (9577 ft.-lb.) to the work of dragging an average length of 500 ft. of $\frac{1}{2}$-in. rope, weighing $500 \times 0.39 = 195$ lb., a distance of 1000 ft. Assuming the resistance of the rope to be 1/40 of its weight, the work to be performed is $1000(195 \div 40) = 4875$ ft.-lb.

In performing this work, the velocity of the empty trip is gradually reduced, assuming the initial velocity, as estimated, to be $v_1 = 11.7$ ft. per second, and calling the velocity with which the trip reaches the side track, 1000 ft. distant, v_2, we have

$$\frac{4500}{2 \times 32.16}(v_1^2 - v_2^2) = 4875$$

$$v_2 = \sqrt{11.7^2 - \frac{64.32 \times 4875}{4500}} = 8.2 \text{ ft. per sec.}$$

However, had the calculations made proper allowance for the effect of the $1\frac{1}{2}$ per cent. downgrade, it would have been found that the empty trip would arrive at the side track with a slightly increased velocity, owing to the effect of the grade, which here exceeds the resistances of the rope and the track combined.

Carbon as a Fertilizer

Letter No. 1—I read with surprise the item in *Coal Age*, Jan. 9, p. 52, drawing attention to a statement made in a previous German publication—the *Zeitschrift fur Angewandte Chemie*—claiming that "carbon is gradually converted into carbon dioxide when added to the soil in a finely divided state," and suggesting that the waste heaps in the neighborhood of collieries could be used, with a possible addition of lime, as a fertilizer to take the place of manure where that is scarce.

Being interested to learn what value, if any, there might be in this suggestion, I wrote to the Pennsylvania State College for their opinion, and beg to submit the reply of Charles W. Stoddart, professor of agricultural chemistry at the college, which is as follows:

> Replying to your inquiry regarding the value of coal dust, preferably mixed with lime, as a producer of carbon dioxide for benefiting plant life, permit me to say that, since the earth's atmosphere contains sufficient carbon dioxide for the use of all plants, it would be a waste of material to employ coal dust for that purpose. The mixture of coal dust and lime would be of absolutely no more value than the lime alone. Although this information may be disheartening, it must be accepted as based on facts.

It has occurred to me that the reply of Professor Stoddart, in this connection. will be of considerable

interest to many who read the item to which I have referred. It may, perhaps, at least prevent some useless experimenting on the part of persons who are always anxious to make use of waste products wherever this is practicable. E. S. S.

Shickshinny, Penn.

[*Coal Age* published the item to which reference is here made and gave its authority, believing that that was sufficient. Like everything else that has come from Germany in recent years, this bit of information bears the stamp of camouflage, being interesting if true, but ostensibly untrue and without value. Like the stamp "Made in Germany," German authorship, today, renders all information from that source doubtful. We are glad our correspondent has exploded this bomb hidden in the waste heaps of collieries.—EDITOR.]

Efficiency in Mine Management

Letter No. 3—Admitting the fact that the present coal market is weak, this is a mighty good time to study the question of efficient management of mines, and to winnow from the chaff a great many facts that will be of service to the man who acts upon them within the next few months when the coal business will again come into its own.

Merely *thinking* of efficiency gets us nowhere. There are hundreds of labor-saving devices and expense-reducing equipment now on the market that cannot fail to put dollars into the pockets of every producer of coal, but which are now absorbed in expense items.

In his article on "Expediting Locomotive Haulage," *Coal Age*, Jan. 30, p. 244, Maverette Ashley gives some thoughts that are capable of being transformed into dollars by the man that reads and acts. Speaking of the use of roller-bearing wheels for mine cars, Mr. Ashley presents facts that are conclusive.

Efficiency Shown in Choice of Equipment

A friend recently told me that, seven years ago, he adopted roller-bearing cars hauled by a 13-ton electric locomotive, which has since traveled 40,000 mi. in its service in the mine. He has employed the usual type of motor runner, and states that it has been necessary, in all that time, to purchase but one new set of tires and replace but one armature. He attributes this remarkable performance to the low draft required to start and haul trips of cars equipped with these bearings.

In another instance, a storage-battery locomotive, hauling modern equipped mine cars, brought out of the mine 600 tons of coal, in a single shift. Facts like these prove that efficiency in mine equipment pays. In still another instance, where a large company operated two mines, located on opposite sides of a creek, it was found difficult to hold the men in one of these mines, owing to their preference to work in the other mine. Investigation showed that the only cause for this preference was the fact that the first mine was equipped with cars having plain-bearing wheels, while roller-bearing cars were in use in the other mine across the creek.

There is no use denying the fact that men seek work where it is most easily performed. Operators are face to face with this condition today. But, instead of discouraging this attitude of the men, it should be encouraged, and every effort should be made to lighten manual labor if we desire to increase the efficiency of that labor.

I thoroughly agree with the statement made by "Observer" on page 246 of the issue to which I have previously referred, where he ascribes the success of a certain mining man to the fact that he had learned long ago that "his job is not an office job." I call to mind now three mining men, each in charge of big interests in this state, who never acted on the motto, "Let George do it." Out on the job all day long, inside the mine and everywhere that work was being done, these men were present observing and directing. The results can be well imagined; the dividends were satisfying and there was no need of apologies based on unprecedented prices for equipment, increase of labor rates, shortage of cars, etc., etc.

Speaking of mine-car wheels, I recall, one company who spent $7000 for repairs, in replacing 20 per cent. of their wheels, in a single year. The same company objected to placing modern cars in their mine alongside of the old cars in use. They stated that it would cause dissatisfaction among their men, and they would be obliged to change their entire equipment and throw out the old cars. The argument is but a weak apology for the failure to recognize the great gain in efficiency within their grasp. I have even known operators to refuse to install labor-saving equipment capable of producing known economies, claiming that more intelligent labor would be required for its operation.

Profiting by the Experience of Others

The kind of efficiency that I am urging is the ability to see and act on a suggestion that will produce from 1¼ to 5 tons, for the same money that was formerly required to produce 1 ton. I refer to the kind of management that considers it worth while to reduce the cost a quarter of a cent per ton, when this can be done by improved equipment.

It is such efficiency that led one of the best mining men in this country to build his mine cars a few inches lower than the other fellow's, and yet make them to hold the same weight of coal. He has no trouble in holding his men, who find they can load a car and a half in the same time that is required to load a single car at the other mine.

That superintendent was a practical man; he designed his own cars according to his own particular needs, without attempting to follow any other type. It would be difficult to estimate, in dollars and cents, what such efficiency on the part of a superintendent is worth to the company who employs him.

Too often the efforts of an efficient superintendent to reduce prospective costs, by the purchase of a better type of equipment, are not appreciated or supported by the management, who find too late that it would have saved them heavy losses had they acted on the suggestion. It is gratifying, however, to know that many companies are now beginning to see that it pays to study real efficiency and to act on the many practical suggestions made along this line.

Many companies, however, fail to properly correlate their efforts. Let me ask, of what use is a 3000-ton tipple, unless there are cars and motors capable of handling this output of coal? Of what use is it to build 600 cars when 400 cars of another type will handle

the same output of coal? Why employ two 10-ton locomotives to do the work of two 8-ton machines? Why use 1000 lb of lubricant on mine cars when it is possible to employ cars that will operate as well and better with 300 lb. of lubricant? It is important to *correlate* our ideas of efficiency. ECONOMIST.

Hunting, W. Va.

Efficiency of Mine Officials

Letter No. 4—In the discussion of efficiency, much will depend on the accepted meaning of the term. For example, from the operator's standpoint, the efficiency of an official is determined by his ability to produce a large tonnage at a low cost of operation, without regard to the actual conditions.

According as conditions are favorable or unfavorable to production, one official will produce results that mark him as "highly efficient," in the estimation of his employer. On the other hand, another man may do far more creditable work and yet be unable to make the same showing, in a low cost per ton of coal produced. As a result, in the estimation of the management, the latter is "less efficient" than the former. But, the real underlying causes were the favorable conditions that assisted the one official and the unfavorable circumstances that retarded the other.

Development Under Favorable Conditions Is No Proof of Efficiency

By way of illustration, let me assume that a company is about to open a mine in a 6-ft. seam of coal, which is overlaid with a good sandrock roof at the start. We will suppose that the preliminary work has been done and the mine put on an operating basis. The company is willing to furnish anything that is necessary to push the development to the point where a good output will be secured.

With this purpose in view, the headings are double-shifted and rooms are opened, in good coal, as quickly as there is space for them to be turned on the entries. The height of the seam is such that there is no necessity to brush the roof or lift bottom, in order to provide the required headroom on the haulage roads. Also, all the rooms are standing in good thick coal. Finally, with proper management, there will be little trouble from roof falls and the cost of timbering in both rooms and headings is low.

Under these favorable conditions, the work of development proceeds rapidly, and the mine becomes a large producer, while the costs of operation are comparatively low. The management give little thought to the future prospects of the mine, or dream that these favorable conditions can hardly be expected to continue always. But, in the meantime, the length of haul is extending and it becomes necessary to make provision for the installation of suitable haulage facilities, drainage systems, and other equipment that will provide adequate ventilation in every section of the mine.

About this time, moreover, there are indications, at the faces of some of the headings, that predict changes in the roof conditions. In one section of the mine, the sandrock has given place to a weak shale containing slips and faults. In another section the headings, which have been gradually dipping, take a sudden rise and the coal is getting thinner. Evidently, the palmy days of the past two or three years are giving place to the time when the management must devise the easiest methods for overcoming the growing difficulties.

Now is the time for the mine superintendent to prove whether or not he has any real efficiency. His fitness will be shown by his ability to adopt more adequate means of drainage and ventilation and improve the system of haulage in a manner that will overcome the increased cost of hauling from greater distances than before. Siphons and pump lines must be arranged to afford good drainage of the roads, which must be maintained in the best possible condition. The ventilating system must be arranged to shorten the distance of air travel, and the air current must be split so as to produce the largest air volume with the least power.

Ability to Master a Situation the True Test

Failure to meet such a situation as the one here described and which must develop sooner or later in every mine, will prove the inefficiency of a superintendent whom the management had been prone to regard as "highly efficient" while things were coming his way. As previously remarked, herein lies the test of true efficiency—the ability to contend successfully with untoward circumstances and conditions.

But, let me suppose that this same mine changes hands, just at the time when it has reached its point of decline. The new officials take hold at a most inopportune moment in the life of the mine. There is much work to be done in cleaning up and starting headings that had been stopped in low coal. Ripping will be required in driving these headings and they must be timbered and graded, all of which increases the cost of operation, while the output becomes less and less owing to the thinning out of the seam.

The proposition here presented is a difficult one. The company must practically open up a new mine, besides cleaning up the old one. Yet *efficiency* on the part of the man in charge will tell. Many supplies in the way of rails and timber will be recovered from abandoned workings; and, finally, the mine will be put on a fair working basis, notwithstanding the increased length of haul and the difficulties of ventilation and drainage. This work of recovering a mine is practical work and requires the highest kind of efficiency on the part of the man in charge.

Again, there are instances on record where changes have been made in the management of mines just as the mine was on the very verge of producing better results than formerly, and the palmy days of large tonnage and low costs were yet to come. The new management then receives the credit for greater efficiency than is their due. Instead, the real credit for putting the mine on its present basis belongs rightfully to the party first in charge.

The point I wish to emphasize, here, is that efficiency must be studied in the light of the practicability of the work in charge. Results are largely determined by coöperation on the part of mine officials, who should be governed by the same purpose of making the mine pay. There should be no quarrels. It is unnecessary for the superintendent to tell the foreman that he is the boss, which the foreman already knows. Coöperation should be the watchword if we expect to succeed.

Rossiter, Penn. J. T. JONES.

INQUIRIES OF GENERAL INTEREST

Comparative Costs in Salt Mining

Kindly permit me to submit the following problem, regarding the comparative cost of two proposed methods, in the mining of salt. One proposition is to pump the salt to the surface in a saturated solution, using for that purpose a centrifugal pump discharging through a 6-in. wood or cast-iron column pipe, the lift being 60 ft. from the sump to the surface. The second proposition is to hoist the rock salt in solid form, using, for that purpose, a self-dumping bucket.

What is desired is to ascertain the comparative cost of handling 60 tons (2000 lb.) per hr., by these two methods. Alternating current of 220 or 440 volts is to be used for driving the motor. When pumping the brine, as in the first proposition, the concentrated solution is to be discharged through a vertical column pipe to a height of 60 ft. In the second proposition, when hoisting the solid salt in buckets, there is first a vertical lift of 15 ft., which is followed by a 20-deg. incline 150 ft. in length. A ¾-in. cable is used in this hoist. The bucket, which is self-dumping, weighs 500 lb. empty and 1500 lb. when loaded to its capacity with salt.

We submit this proposition to *Coal Age* and its readers, hoping for their advice and suggestions, which will be greatly appreciated.

Oakland, Calif. ENGINEER.

So much depends on conditions when considering two propositions of this nature, that *Coal Age* is able to give but a suggestive outline of the relative cost, assuming average efficiencies and other data that can only be taken as approximating more or less closely the actual facts.

1. In the first proposition, rock salt will require about 2½ times its weight of water to form a concentrated solution of brine. The handling of 60 short tons, per hr., of solid salt in a concentrated solution, will require the pumping of 7000 lb. of brine to a height of 60 ft., each minute. In estimating the power we will assume an over-all efficiency in the pump and the motor of, say 60 per cent., and ignore both the velocity head and the friction head, which are inappreciable when discharging 700 gal. through a 6-in. pipe 60 ft. long. The power required, in this case, is

$$H = \frac{60(7000 \times 60)0.746}{0.60 \times 33{,}000} = 950 \text{ kw.-hr.}$$

2. In the second proposition, the bucket holds 1000 lb. (½ ton) and, to handle an output of 60 tons per hr., will require two full hoists or round trips each minute, hoisting practically 1500 lb. to a total vertical height of $15 + 150 \sin 20° = 15 + 150 \times 0.2588 =$ say 69 ft. Here, so much depends on the mechanical arrangement and equipment, that it is only possible to guess at the efficiency of the hoist, which we will assume as 50 per cent. Making two hoists per minute, or 120 hoists per hour, and assuming an efficiency of 50 per cent., the power required will be, approximately,

$$H = \frac{120(1500 \times 69)0.746}{0.50 \times 33{,}000} = \text{say } 560 \text{ kw.-hr.}$$

It is difficult, however, to see what arrangement can be adopted, in the second proposition, to permit of making a round trip in 30 sec., including the time of dumping and changing buckets below.

Exhaust from Steam Pump

Recently, I have had quite an argument with our pumpman, in regard to the proper method of connecting up the exhaust of a steam Cameron pump, so as to avoid the annoyance caused by the exhaust steam.

Our pump is located at the foot of the slope and the exhaust steam often makes the place so hot that it is difficult for the men to work there. We have decided that something must be done to improve the condition. Either we would have to turn the exhaust into a barrel, or make connection direct with the pipe line.

In talking over the matter, I claimed that this connection should be made with the suction pipe. The pumpman, however, claimed that the exhaust should be conducted into the column pipe through which the pump was discharging, making the connection at a certain distance from the pump. The pump is operating under a boiler pressure of 120 lb. gage.

Kindly state which method is correct—whether the exhaust should be connected with the suction or with the column pipe, and why.

———, Mo. ASSISTANT SUPERINTENDENT.

The exhaust from a steam pump located in a mine can be, and often is, connected with the suction pipe, using the precaution to enter the exhaust at a point sufficiently below the pump to insure the steam being injected into the water. In a short suction lift, this connection should preferably be made close to the top of the pipe. It is only where the suction lift approaches the theoretical limit, as determined by the atmospheric pressure acting to lift the water from the supply basin to the pump, that it is necessary to use the precaution just mentioned, in order to make sure of the direct contact of the entering steam with the water in the pipe. Should there be any tendency to spasmodic suction, the entrance of the steam at the top of a long suction lift would possibly cause a back pressure, or give rise to water-hammer due to the sudden condensation of the accumulated steam. This condensation should always take place uniformly, as quickly as the steam enters the pipe if the trouble is to be wholly avoided.

Should the exhaust connection be made with the column pipe, not only would the pump be compelled to exhaust under the head due to the water in the column pipe, but the condensation of the steam in that pipe would have a tendency to interfere with the uniform discharge or flow of water from the pump to the surface and disrupt, to that extent, the action of the pump, with the result that water-hammer would often occur, which would be both annoying and harmful.

We shall be glad to have the suggestions and comments of our practical readers regarding this point.

EXAMINATION QUESTIONS

Mine Examiners' Examination, Springfield, Ill., Dec. 17, 1918

(*Selected Questions*)

Ques.—What are the duties of a mine examiner?

Ans.—The primary duties of a mine examiner, as his title indicates, are to examine the mine for any possible danger that may exist on the roads, travelingways, or air-courses, or in the working places. The examination must include all void and abandoned places and falls where gas or other dangers may exist.

The first examination is made in the early morning, within two or three hours of the time set for the men to enter the mine for work. At that time, the examiner must visit each working place and travel the air-courses and roads, following the air current throughout his section of the mine and stopping to make the necessary tests for gas and to examine the roof and timbers to ascertain if there is any danger present. When this examination is finished, the examiner must return to the mine entrance and enter, in a book kept for that purpose, a full report of his work, stating any dangers that he may have found, by describing their nature and location. It is his duty to withhold the checks of any miners whose places he has found unsafe for work and to deliver these checks to the foreman.

The second examination of the mine is made more in detail, and when the men are at work in their places. At that time, it is the duty of the examiner to observe more carefully the condition of each working place and to give any needed instructions to the miners to insure their safety. The coal-mining laws of Illinois require the mine examiner to see that the air current is traveling in its proper course and quantity, and to measure the air passing in the last crosscut, in each pair of entries, or in the last room, in longwall mines, and at any other necessary points and to note the results in a book kept for the purpose. He must mark the date of his examination on the wall of each place examined.

Ques.—What is a regulator and when can it be used to advantage?

Ans.—A regulator is a device for properly proportioning the quantity of air between two splits, according to their requirements. This is accomplished by obstructing the flow of air in that split taking more than its proper proportion. A mine regulator consists of any device that will reduce the area of passage in an airway and, by that means, regulate the quantity of air circulated in that split.

Regulators are used to advantage where the requirements in any section of the mine or in any air split are such as to demand more air than such section or split would receive in the natural division of the air current. For example, in natural division, the larger portion of the air will pass out through the shorter split, while it is the longer airway that will generally require a greater proportion of the air. In such cases, a regulator placed in the shorter airway will obstruct the flow in that split and cause a larger quantity to pass through the longer split.

Ques.—In a certain coal mine in this state, there are 576 men employed, who are using 22 mules to haul the coal. (a) What quantity of air must be entering the mine to comply with the state mining laws? (b) How many splits will be required?

Ans.—(a) If the mine is not generating gas, the quantity of air required by law is 150 cu.ft. per man per min., and 500 cu.ft. for each mule per min., which makes the quantity required, in that case, $576 \times 100 + 22 \times 500 = 68{,}600$ cu.ft. per min. On the other hand, if the mine is generating gas, the law requires that there shall not be less than 150,000 cu.ft. per man per min., which would make the total required circulation not less than 97,400 cu.ft. per min. In any case, the law authorizes the mine inspector to order that these quantities be increased, if he thinks that more air is required, which order must be made in writing.

(b) The law further provides that the main air current shall be so divided as to give a separate split of pure air to each 100 men employed in the mine. This would require, in the present case, six splits of air, unless the mine inspector exercised his power to require a greater number, which he is authorized to do by law if, in his judgment, this is necessary.

Ques.—(a) Where would you expect to find blackdamp and firedamp in a mine? (b) How could you detect the same?

Ans.—(a) In either case, the mixture will be more apt to be found in places where it is generated, provided the mine is properly ventilated, and the quantity of air passing is sufficient to carry away the gases produced and prevent their accumulation in quantity. On the other hand, where the gas generated in a mine is not promptly swept away with the air current but has an opportunity to accumulate, the heavier blackdamp may be expected to be found at the face of dip headings or rooms and in other low places where the circulation is not sufficient to sweep them away. The lighter firedamp mixtures, under similar conditions, may be expected to be found in cavities of the roof or at the face of pitch headings and in rise workings where the circulation of air is insufficient to keep such places free from the gas.

(b) A blackdamp mixture is easily detected by observing its effect on a lamp flame, which is dimmed or completely extinguished by the gas. A firedamp mixture is detected by observing its effect on the flame of a safety lamp, which must be raised cautiously toward the roof. The presence of firedamp causes a small nonluminous cap to form above the flame when small quantities of the gas are present. As the quantity of gas is increased, the height and volume of the flame is increased, and the flame becomes more or less agitated and, frequently, slight explosions will occur within the lamp chimney as the firedamp mixture approaches its maximum explosive point.

BOOK REVIEWS

Truth About the Cost of Living

WARTIME CHANGES IN THE COST OF LIVING. Research Report No. 9, National Industrial Conference Board. Pages viii + 81; 6 x 9 in.; no illustrations. National Industrial Conference Board, 15 Beacon St., Boston, Mass.

This impartial and accurate account of the effect of the war on the cost of living may be commended to all parties, whether viewing matters from the standpoint of labor or from the standpoint of capital. It is not based on wholesale but on retail prices. As the report says, the advance in wholesale prices is not reflected in retail prices until months later. It quotes the United States Bureau of Statistics, which in 1901 found that expenditure for food was about 43 per cent. of the total income; for shelter about 18 per cent.; for clothing nearly 13 per cent.; for fuel and light nearly 6 per cent.; and for sundries a little over 20 per cent.

The report sums up food costs as follows: "Although it is true that standards of living, transportation, accessibility to supply and other factors cause some local variations, 60 per cent. to 65 per cent. fairly reflects the advance in food prices from the outbreak of the war in the summer of 1914 to the middle of June, 1918." The figure 62 is taken by the Conference Board to represent a fair average percentage for the increase in costs in food from the outbreak of the war till June, 1918.

Rents have gone up and down. The report, however, says, "On the whole it appears that an estimate of 15 per cent. for the increase in the rent of workingmen's houses is sufficient, except for communities subject to peculiar conditions."

The cost of clothing has soared higher than either rents or food. "It appears," says this monograph, "that a fair estimate of the increase in the cost of clothing for a wage-earner's family between July, 1914, and June, 1918, would be 70 to 80 per cent. As the increase for lower-cost budgets tends to approach 80 per cent. rather than 70 per cent., the average increase has been placed at 77 per cent."

In summing up the cost of fuel and light the report says: "The cost of fuel and light in different cities varied so greatly in response to a number of local conditions, and the price changes have been so divergent, as to make even an approximation of the increase very difficult. It would appear, however, that in June, 1918, the average price of anthracite was 30 to 35 per cent. higher than in 1914; the advance in bituminous coal was considerably greater. The price of gas showed a much smaller percentage of increase and in many cities remains unchanged.

"The increase in the cost of fuel and light has been placed at 45 per cent. This estimate has not the same validity as have those for food and clothing. For the latter the data secured were not only more extensive but more uniform than was the case with fuel and light, for which local conditions determine many of the factors entering into the increased cost. Since, however, fuel and light constitute less than 6 per cent. of the total family expenditure, a considerable variation in the percentage of increase has but little effect on the budget as a whole."

The concluding remarks of the Board are as follows: "Taking into consideration all of the factors in the problem, the evidence points strongly to the conclusion that for the great majority of American communities the average increase in the cost of living between July, 1914, and June, 1918, lies between 50 and 55 per cent. Clothing showed the most marked advance of any of the major items in the budget—77 per cent.—but quantitatively this is less important than the 62 per cent. increase in the cost of food, since food represents about 43 per cent. of the average expenditure, while clothing represents only 13 per cent.

"It should be repeated that in certain localities, particularly where there have been unusual advances in rent, the increase in the budget has been as a whole somewhat greater. Since rent requires about 18 per cent. of the ordinary family expenditure, each further increase of 5 per cent. in this item means the addition of about 1 per cent. to the budget. It is thus a simple matter to adjust the board's estimate to fit communities where unusually large rent increases have occurred. Similar adjustments to allow for local conditions affecting the cost of fuel would not result in an important modification of the general average."

The estimate for the advance in sundries, which sundries make 20 per cent. of the wage-earner's budget, include the advance in carfare, furniture, insurance, medical service, books, recreation, religious and charitable expenditures, luxuries and incidents. The report assumes (really it would appear without believing it to be true, to judge by its comments on each item in turn) that an average of 50 per cent. will represent the increase in cost of sundries. This "sundry" estimate is the lame leg of the whole report. The argument for 50 per cent. could, however, have some show of justification if the item "furniture" were given a place in the elaboration of the argument—for furniture has certainly soared.

Moreover, a further justification would have been found if the board had said, as is in fact true, that insurance has gone up as much as the workingman's budget. Instead the board says lamely, "Insurance has shown practically no change." It is true that $10 will buy as much life or accident insurance as before the war, but when the money is delivered what will it buy?—not so much as before the war but only 66⅔ per cent., assuming that prices have gone up 50 per cent. A workingman is no longer as well insured as he was before the war unless he has increased his insurance premium.

It is the same with savings. Savings, like insurance, represent deferred purchases. If the cost of the things to be furnished, the food, shelter, clothing, fuel and light rise in price, the savings and insurance should be higher to meet them. British figures of increased cost of living as quoted recently by the United States Bureau of Labor Statistics are similarly vitiated.

However, the report is unbiased and in every way excellent. It is an authoritative statement, capable of amendment for certain local conditions, and it will show which wage increases had a degree of profiteering taint and which wage increases were too small. It will show who were profiteers and who the sad victims of wage profiteering. All who received increases in wage above the increase in cost of living and cost of transferring their labor were profiteers. All who received advances in wage less than the advances in cost of living were victims of the profiteering on the part of other laboring men.

More Short Monographs Wanted

MINE TRACKS, THEIR LOCATION AND CONSTRUCTION. By J. McCrystle. Pages x + 102 + 3 index, 23 ill. McGraw-Hill Book Co., Inc., 239 West 39th St., New York City. Leather. Price, $1.50 net.

An extremely welcome reprint of articles appearing in *Coal Age* is J. McCrystle's "Mine Tracks," treating briefly and well of the materials used and the principles involved in the design and installation of mine tracks and containing rules for standard practice. We need a series of inexpensive monographs of this sort on all the many phases in coal mining, and we trust that one so capable as Mr. McCrystle may soon venture to meet in one or more directions the public's urgent need.

FOREIGN MARKETS AND EXPORT NEWS

Output and Distribution of British Coal in 1918

The following table, which has been prepared by the Department of Coal Supplies of Great Britain, shows the output and distribution for 1918, as compared with 1917 and the pre-war year 1913. The reduction of 16½ million tons—about 10 per cent. in home consumption in 1918, as compared with 1913—in spite of the increased requirements of industries and transport connected with the production of munitions, was brought about by the curtailment of supplies to less essential industries and for domestic consumption. Exports were at the same time restricted to the quantities necessary to supply the requirements of the Allies, and to meet obligations to neutrals in connection with agreements, under which they furnished England with shipping and other services essential to the successful conduct of the war.

	1913	1917	1918
	— Millions of Tons —		
Output	287¼	248	226½
Withdrawal from stocks at pits	....	....	1½
Additions to stocks at pits	....	2	....
Mine consumption and miners' coal	22½	22½	22½
Net output distributed	265	224½	205½
Bunkers (foreign and coastwise) and Admiralty shipments	25½	27	25½
Exports	77¼	38½	34½
Home consumption	162	159	145½
Totals	265	224½	205½

Foreign Freight Rates

W. W. Battle & Co.'s coal trade freight report for Mar. 10 states that freight market conditions are practically the same as a week ago, and the few charters completed for export coal during this period were at the Chartering Committee's maximum rates. There is little demand for steamers to take coal to West Indian ports, but the demand continues for tonnage for South American ports. Tonnage is difficult to obtain to latter destinations. The Chartering Committee's rates are as follows:

Steam—Havana, $7.50, 600 tons dis.; Cardenas or Sagua, $9, 300 tons dis.; Cienfuegos $9, 500 tons dis.; Caibarien, $9.50, 300 tons dis.. Guantanamo, $8.50, 500 tons dis.; $9, 400 tons dis.; Manzanillo, $9.50, 300 tons dis.; Bermuda, $9.50, and Bermuda, p. c. and dis. free, 300 tons dis.; Kingston, $9.50, 400 tons dis.; St. Thomas, $10, 500 tons dis.; St. Lucia, $11, 500 tons dis.; Santiago, $8.50, 500 tons dis.; $9, 400 tons dis.; Barbados, $11, 500 tons dis.; Port of Spain, Trinidad, $11, 500 tons dis.; Curacao, $10.50, free p. c. Curacao, 500 tons discharge.

Sail (maximum) — Para, $15.50 net; Bahia, $18.50 net; Pernambuco, $18.50 net; Rio, $19.50 net; Santos, $19.50 net; Buenos Aires, $18.50 net; La Plata, $18.50 net; Montevideo, $19.50 net. (Gross rates $1.50 per ton in excess of net rates). On all the foregoing rates, charterers pay vessel's towage to coal port. To Nitrate Range, $16.50 gross prepaid. (Same rate steam.)

The Chartering Committee's rate by steam is $19.50 net, with 1000 tons dis. to Rio, $19.50 net, 1000 tons dis., or $21, 600 tons dis. to Santos; $18.50 net, 1000 tons dis. to Buenos Aires, and $19.50 net, with 750 tons dis. to Montevideo.

Hampton Roads Coal Exports

Lamberts Point			Cargo	Bunkers
		NORFOLK		
Mar. 1	Nor. S.S. Roar	Manzanillo, Cuba	1,710	202
Mar. 1	Amer. S.S. Lake Chelan	Cristobal, C. Z.	2,325	238
Mar. 1	Nor. Sp. Protector	Rio de Janeiro, Brazil	2,775	....
Mar. 3	Nor. S.S. Nepos	Barbados, B. W. I.	4,034	471
Mar. 4	Swed. S.S. Hermes	Havana, Cuba	2,305	134
Mar. 4	Amer. S.S. Lake Markham	San Juan, P. R.	2,328	328
Mar. 5	Ital. Bk. Rosa M	Bagnoli, Italy	1,956	....
Mar. 5	Nor. Bk. Hero	Montevideo, Uruguay	3,660	....
Mar. 5	Amer. S.S. Randolph M. Warren	Rio de Janeiro, Brazil	2,701	1,284
		NEWPORT NEWS		
Mar. 3	Amer. S.S. Lake Desha	Cristobal, C. Z.	2,965	464
Mar. 3	Brit. Sch. Edith M. Dawson	Fort de France, Martinique	723	....
Mar. 4	Dan. S.S. Henry Tegner	Nuevitas, Cuba	1,959	166
Mar. 4	Dan. S.S. Erik II	Antilla, Cuba	2,654	204
Mar. 4	Amer. S.S. Lake Arline	Santiago, Cuba	2,027	563
Mar. 5	Am. Sch. Augusta G. Hilton	Pernambuco, Brazil	2,370	....
Mar. 5	Amer. S.S. Kennebunk	Sagua la Grande, Cuba	1,108	....
Mar. 5	Nor. S.S. Ryvarden	Santiago, Cuba	1,444	182
Mar. 7	Am. Sch. Calvin P. Harris	Gibara, Cuba	559	....

Danish Coal Imports in 1918

In November, 1918, Denmark imported 72,086 tons of coal from the United Kingdom; 19,254 tons from Germany; 156 tons from other places. In October, 1918, the coal exports to Denmark from the sources enumerated above totalled 61,167 tons, 42,512 tons and 156 tons respectively. For the period January to October, inclusive, 1918, the Danish coal imports amounted to 889,742 tons from the United Kingdom, 620,792 tons from Germany and 2227 tons from other places.

During December, 1918, the importation of coal virtually ceased, due to the disturbed conditions in Germany and the fact that England temporarily stopped coal shipments to Denmark following the armistice.

The "Calcutta Gazette" reports that only 1,014,993 tons of coal were exported from Calcutta in 1918, as against 3,017,180 tons in 1913-14.

To Construct Barge Fleets for Shipping Coal South

The Mississippi Valley Association, which represents commercial and shipping interests, is planning extensive development of the inland waterways, especially the Mississippi River and its tributaries, as a means of promoting the expansion of foreign trade, particularly in coal. The plan contemplates the construction of barge fleets for the transportation of coal to the South American markets. It is believed that coal cargoes originating on the Ohio, Monongahela, Kanawha and Warrior Rivers and the tributaries of the Mississippi, can be shipped to New Orleans and thence to foreign ports at a lower rate than is now given in all-rail routes to the seaboard and from Atlantic ports to the South American countries.

Coal and Coke Exports from New York in January

Comparison of the coal and coke exports from the Port of New York during the month of January this year shows a decided gain both in tonnage and valuation as compared with January of 1917 and 1918. The table also shows that the markets for anthracite and bituminous coals have changed considerably, while the markets for coke remain, with a few exceptions, practically the same. The tabulations follow:

To	Anthracite						Bituminous						Coke					
	1917		1918		1919		1917		1918		1919		1917		1918		1919	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value
Argentina	1,075	$8,600	..	.....	.....	.....	....	.....	..	.....	700	$5,600	.....	.....	....	.....	..	.....
Barbados	50	625	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	..	.....
Bermuda	.....	.....	99	$792	.....	.....	128	$940	..	.....	....	.....	.....	.....	....	.....	..	.....
Bolivia	96	1,366	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	..	.....
Brazil	290	2,197	..	.....	.....	.....	987	4,935	..	.....	....	.....	18	$440	....	.....	..	.....
British West Indies	1	13	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	..	.....
Canada	3,676	$28,329	...	.....	8,375	$69,839	....	.....	..	.....	524	4,223	.....	.....	....	.....	..	.....
Chile	57	495	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	60	$1,410	..	.....
Costa Rica	14	145	..	.....	.....	.....	....	.....	..	.....	....	.....	24	234	....	.....	..	.....
Cuba	93	800	200	$2,200	.....	.....	8	$80	..	.....	....	.....	4	43	....	.....	15	$430
Colombia	....	.....	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	20	520	..	.....
Danish West Indies	....	.....	..	.....	.....	.....	....	.....	..	.....	508	3,404	.....	.....	....	.....	..	.....
Denmark	169	2,269	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	..	.....
Ecuador	....	.....	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	11	360
France	....	.....	4	40	.....	.....	....	.....	..	.....	....	.....	1,555	9,522	1,370	13,700	..	.....
French West Indies	....	.....	..	.....	.....	.....	....	.....	..	.....	....	.....	20	200	143	3,790	6	168
Italy	....	.....	..	.....	.....	.....	....	.....	..	.....	1,349	10,117	.....	.....	....	.....	..	.....
Jamaica	2	12	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	..	.....
Mexico	2	21	..	.....	.....	.....	926	3,341	..	.....	32	463	14	196	....	.....	2	80
Newfoundland	.....	.....	177	1,101	87	702	....	.....	..	.....	....	.....	.....	.....	....	.....	..	.....
Panama	90	675	10	90	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	..	.....
Paraguay	....	.....	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	8	15
Peru	....	.....	..	.....	.....	.....	....	.....	..	.....	....	.....	.....	.....	....	.....	..	.....
San Domingo	2,319	19,521	..	.....	1,905	13,734	....	.....	..	.....	55	1,301	13	120	5	135	55	1,650
Salvador	.....	.....	..	.....	.....	.....	....	.....	..	.....	....	.....	3	35	....	.....	..	.....
Trinidad	.....	.....	..	.....	.....	.....	....	.....	30	$285	....	.....	.....	.....	1	27	3	63
Venezuela	.....	.....	..	.....	.....	.....	....	.....	500	3,150	....	.....	9	112	....	.....	470	13,225
Totals	7,934	$65,068	490	$4,223	10,367	$84,275	2,049	$9,246	530	$3,435	3,168	$25,108	$1,660	$10,902	1,599	$19,582	570	$16,091

COAL AND COKE NEWS

What Happened in February

[The bracketed figures in the text refer to pages in the present volume and should the reader desire further information he can obtain it by reference to the pages indicated.]

Feb. 1—Mine Workers' representatives meet presidents and secretaries of New River Association and Winding Gulf Operators' Association at Charleston, W. Va., who refuse to discuss a new scale regarding demand as in violation of contract [XV, 370]—Maximum prices on anthracite and all the coal and coke regulations, except three, are suspended [XV, 282]—Allison O. Smith, special umpire of Fuel Administration, makes several decisions for New River and Winding Gulf fields [XV, 411].

Feb. 3—Florence and Sydney mines of Nova Scotia Steel and Coal Co. closed down owing to alleged interference of Dominion Iron and Steel Co. with its workings [XV, 339. 456].

Feb. 5—Annual banquet of Engineers' Society of Northeastern Pennsylvania [XV, 364].

Feb. 7—White mines of H. C. Frick Coke Co. are abandoned [XV, 382]—River tipple and trestle of Hecla Coal and Coke Co., Isabella, Fayette County, Pennsylvania, destroyed by fire [XV, 382].

Feb. 10—Store of Federal Coal Co. at Cary, Ky., burned down [XV, 382].

Feb. 11—Alicia mine of W. H. Brown, with 400 coke ovens, all located just above Brownsville, closed down indefinitely [XV, 382]—Coal price regulation in Canada ends [XV, 422].

Feb. 14—Southern Appalachian Coal Operators' Association meets at Louisville, Ky. [XV, 397, 398]—Mine workers of West Virginia parade at Charleston, W. Va., as a protest against "Red flag bill" [XV, 457].

Feb. 17—American Institute of Mining Engineers meets at New York City, adjourning Feb. 20 and changing its name to American Institute of Mining and Metallurgical Engineers [XV, 237, 448, 449].

Feb. 18—J. R. Gilmore, president District 29, and Lawrence Dwyer, international board member of same district, arrested as implicated in shooting affray [XV, 498].

Feb. 20—Mr. Deitrich, representative from Allegheny County, Pennsylvania, introduces bill providing that where injury arises from failure of employer to obey safety requirements no consideration shall be allowed to affect liability of employer [XV, 498].

Feb. 21—Frank Farrington advocates 6-hour day, 5-day week, as cure for shortage of demand for coal [XV, 499]—Fire breaks out in the South Wilkes-Barre No. 5 colliery of Lehigh and Wilkes-Barre Coal Co., and is walled in on Feb. 23 [XV, 469].

Feb. 23—Sir Guy Spencer Calthrop, controller of British Coal mines, since 1917, dies of influenza [XV, 471].

Feb. 24—The Amalgamated Mine Workers of Nova Scotia sign contract providing for 8-hour day with no suspension for meal [XV, 499].

Feb. 25—V. Everit Macy announces that the National War Labor Board awards the marine workers of New York an 8-hour day, 6-day week and a week's holiday a year, the short day to be paid for at the same rate as the long day. No retroactive provisions or increase in wage incorporated in decision.

Feb. 27—Meeting of New York State Coal Merchants' Association—Wood tipple at Kellar-Klondyke mine near Clinton, Ill., is blown down by explosion [XV, 510].

Feb. 28—William C. Redfield announces formation of Industrial Board of Department of Commerce to stabilize prices at a lower and "equitable" level.

Harrisburg, Penn.

On Mar. 13 Governor Sproul addressed a letter to Attorney General Schaffer asking what powers are vested in the State government to inquire as to the cause for the proposed advance in the price of anthracite, after a mild winter and when mines are on short time because of a lessening of demand, and suggesting that, if necessary to secure authority, the matter be referred to the Legislature, which is now in session. The Governor's letter follows in part:

I know there have been investigations of one kind or another by committees and commissions from different authorities and that the first result of the recent intervention of the Federal Government in the matter was an immediate and wholesale increase in prices, especially to the small consumer. Our Legislature now being in session, it has occurred to me that, if we lack the legal machinery to make the proper inquiries and to protect our people against any unreasonable profiteering in this necessity of life here in Pennsylvania, now is the time to establish such machinery. If we have the power to regulate the prices of food and other essentials of life for our people, have we not some rights in the question of fuel prices in case we should be able to establish the fact that hard coal costs are unreasonably high?

Coming right at this time, when the efforts of patriotic people everywhere are directed toward restoring the cost of living to a normal basis and when we are all bending every energy to provide means of employment in order to help stabilize labor conditions in the country, it would seem to me that there would have to be extraordinarily good reasons to justify an increase in the cost to our people of such a necessity to comfortable existence as anthracite coal.

If it is necessary to have a legislative commission investigate the matter, or action is required in other lines to make the power of the State effective in the situation, I am prepared to recommend such action upon the receipt of your advice as to how best to accomplish the results we desire. I shall, therefore, be greatly obliged to you if you will give immediate consideration to this communication.

Uniontown, Penn.

The Pittsburgh Steel Co. is now the owner of the Alicia No. 1 and No. 2 mines, 2400 acres of Fayette and Greene County coal, the marine ways adjoining the mines on the Monongahela River and a fleet of three river tugs and 50 barges. The property was sold by Capt. W. Harry Brown, one of the largest independent coke operators in the Connellsville region, for a consideration of approximately $4,000,000. The deal has been pending for several weeks and several times has been reported consumated. Confirmation of its closing in Pittsburgh last Saturday morning was made a few hours later at the Brownsville office of the Brown interests.

The deal represents one of the largest transfers of coal property in recent years and removes from the market one of the best brands of coke manufactured in the Connellsville region. The entire output of the two plants will be used to supply fuel for the mills of the Pittsburgh Steel Co. Heretofore the steel concern has been securing the major part of its coke supply from the W. J. Rainey interests.

Involved in the deal is the Alicia No. 1 works at Brownsville and the Alicia No. 2 works at Grays Landing, on the Greene County side of the Monongahela River. The output of the two Alicia plants will be hauled in barges down the Monongahela River to the Monessen mills of the Pittsburgh Steel Co. about 15 miles distant.

The Alicia No. 1 plant is reputed to be one of the most modern and best equipped coking plants in the Connellsville region. Construction of that plant was commenced in 1908. The plant includes 400 rectangular ovens equipped with the Mitchell McCleary doors. The pusher, leveler and conveyor installed is the product of the Connellsville Machine Car Co. There are 500-hp. Buckeye engines and the power plant has a capacity of 600 kw. One of the features of that plant is a large steel traveling bridge which spans a double railroad track and joins a river tipple. A coke crusher is located at the upper part of the plant and has a capacity of 15 to 18 cars of crushed coke daily. The traveling steel bridge represents an investment of $200,000. At the works are 150 dwellings for workmen as well as the administration building which contains the company store, post office and offices.

Coal land involved in the sale was purchased in 1912 from J. V. Thompson. There were originally 1000 acres at the Alicia No. 2 plant, but Mr. Brown later acquired 800 acres. There yet remain 1000 acres undeveloped in the Alicia No. 1 field. Shipments from Alicia No. 2 are entirely by river, but facilities both for rail and river shipment are maintained at Alicia No. 1.

Charleston, W. Va.

It was rather startling to learn that a car shortage was developing during the week ending Mar. 15 in all districts through which the Chesapeake & Ohio Ry. passed. This has been expected for some time, because it was realized that when orders for coal did become more plentiful it would be found that many cars were tied up with unloaded coal or else scattered to the four winds, as is now the case. Of course, this means in West Virginia that there is an augmented demand for coal and that mines are beginning to be operated on a more regular schedule.

So far, however, there has been no material increase in the output, production during the first and second weeks of March averaging about the same as it had during the latter part of February. It was significant, also, that there had been no further decreases and that if anything there had been a further advance, although the trade had not had an opportunity to fully respond to an improvement in market conditions.

What caused operators to look for an increase in orders was the significant improvement in the New England market and the fact that an accumulation of coal at tidewater points had been greatly reduced. However, there seemed no prospect of any large volume of export business. West Virginia producers also observed a more insistent call for coal in the Western market.

Surplus stocks of coal are being so rapidly depleted that West Virginia coal men feel assured that just as soon as lake navigation is resumed, in a few weeks, it will be a signal for the resumption of general activity in the mining business. The prediction is even made that by July there will be such a stiff demand that there will be an increase of at least a dollar per ton on coal. During the first part of the week beginning Mar. 10 mines were being operated on about a 50 per cent. schedule, as against about 40 per cent. for the previous week. That meant some mines at least were running three days a week as against one and two days during previous weeks.

Dallas, Tex.

Texas lignite beds will soon be developed and the lignite produced therefrom used as fuel by the industries of this state, thus eliminating the necessity of shipping coal for fuel from long distances to industries situated on extensive lignite beds in east and northeast Texas. The Federal Government's Bureau of Mines is preparing to locate an experimental plant in Texas in close proximity to the lignite producing areas in an effort to work out some plan by which the Texas lignite may be dehydrated and rendered more fit for fuel.

The difficulty with the Texas product has been that it has such a high water content that its use as fuel has been thereby rendered impractical, and industries situated over extensive lignite beds have been forced to ship coal from Oklahoma or Colorado for use in their furnaces. Experts of the Federal Bureau of Mines believe that by a carbonizing process the lignite may be made fit for fuel. This process, it is explained, is similar to coking and leaves as a residue a gas which also has value

for its commercial use. The coal or lignite remaining can be burned in an open grate, in furnaces, or made into briquets approximating anthracite coal.

The location of this experimental plant has been taken up by the Texas Lignite Operators' Association, and at a meeting last week at Waco the situation was discussed. It is considered likely that Waco will get the plant, as the Government has announced that the location will be largely determined by nearness to lignite beds and to a city at which the gas produced from the plant could be marketed, and Waco offers both of these. Lignite can readily be delivered from the beds in Milan County, some of the most extensive in the state, to Waco for $2 a ton, the cost at the mine being $1.50 a ton, and waco at this time is planning the erection of a municipal artificial gas plant. The by-products from a ton of lignite, it is estimated by the lignite operators, would be worth $22.

New York, N. Y.

A committee composed of J. R. Thomas, president, Carbon Fuel Co., Charleston, W. Va.; W. G. Ireland, sales manager, Jamison Coal and Coke Co., Pittsburgh, Penn.; Harry Boulton, president, Central Pennsylvania Coal Producers' Association, Clearfield, Penn.; John J. Tierney, vice president and general sales manager, Crozier-Pocahontas Coal Co., Philadelphia; John J. Brophy, treasurer and general manager, Piedmont and Georges Creek Coal Co., Frostburg, Md.; Arnold Gertsell, sales manager, Percy Heilner and Sons Co., Philadelphia, and Wilbur A. Marshall, president, Wholesale Coal Trade Association of New York, was appointed to revise the rules of the Tidewater Coal Exchange, and particularly the classification of mines, at a meeting held in Washington, D. C., on Mar. 14 and 15. The meeting, which was held at the Shoreham Hotel, was called by the Executive Committee and Permanent Railway Committee of the Tidewater Coal Exchange to consider objections which had been made or were to be made to the rules, regulations and practices of the Exchange. It was attended by about 150 operators, trans-shippers and consumers.

After the various complaints had been discussed, and new recommendations had been considered, Charles S. Allen, secretary of the Wholesale Coal Trade Association of New York, offered a resolution providing for the appointment of a committee to revise the rules of the Exchange, and also the classification of mines.

During the meeting F. M. Whitaker, of the U. S. Railroad Administration, read a statement which showed the saving to the railroads, from Aug. 1, 1917, to Jan. 31, 1919, to have been:

Tonnage dumped	48,785,967
Number of cars dumped	967,800
Car days saved on gross detention basis	1,747,600
Saving effected on per diem	1,048,560
Cars saved	47,035
Investment necessary to have procured 47,035 cars at $2900 per car	$136,401,500
Interest on above investment at 6 per cent	$8,184,090
Credits extended to members (excluding Government members), tons	3,000,000

As a result of the meeting it is more than likely that the Exchange will be continued in operation, it being favored by the Railroad Administration and a large proportion of the coal operators and shippers. The committee is to meet in Philadelphia, Friday, Mar. 21, at the offices of the Tidewater Coal Exchange.

Victoria, B. C.

There has been a revival in Vancouver, B. C., of the agitation against the coal dealers because of what is termed the excessive cost of fuel to the consumers in view of the fact that the coal mines of Vancouver Island, the sources of supply, are only some sixty odd miles distant. The discussion arose through the statement of T. D. Bulger, Dominion Fair Wage Officer, that the Island miners obtained their domestic coal for $4.50 a ton, with an extra dollar a ton for delivery. This was the same coal which was selling in Vancouver for $10.15 a ton. The dealers declare that their profit at the latter selling price is not more than from 40 to 47c. a ton. They say that they buy their coal at $6.45 or $7.20 a ton loaded on the scow at Vancouver Island, but that added to that figure are such expenses as freight charges, insurance, unloading, screening, sacking and delivery. These items, with the wages of all engaged in the operations at from $4 to $5 a day and a loss in screening of from 10 to 15 per cent., accounted for the difference between the purchase price at tidewater on the Island and in the cellars of the consumers.

If the coal miners were getting their coal for $4.50 at the pit mouth the opinion was expressed by the dealers that they must be obtaining it below cost. It was further explained that the reason that some dealers were able to sell at $10.15 and others were forced to charge $10.50 a ton was that the Fuel Controller had issued an order requiring the Canadian Western Fuel Co. to sell at not more than $6.45 per long ton loaded on scows, while the Canadian Collieries (D), Ltd., were permitted to dispose of its coal at a higher figure, which it had fixed at $7.20 per long ton on scows. This decision had been reached after an investigation into the cost of production in the cases of the different collieries of the Island. The dealers' contention is that the prices to the consumers are based on expenses and a profit to them of not more than from 40 to 47c. a ton.

PENNSYLVANIA

Anthracite

Hazleton—The G. B. Markle Co. has announced that the war gardens which were a great success for the past two years will be continued this summer. The plots, 30 x 100 ft., are rented for $1 a year, which includes plowing and fertilizers.

Hazleton—Plans considered by the Lehigh Valley Coal Co. to electrify a number of additional operations of that company have been given a setback, because of the high price of materials and labor, it was learned on Mar. 10. Especially was work planned for the Lehigh region, and this has been halted by the holding up of prices for materials. This condition makes future plans of the company rather uncertain.

Shickshinny—A recent fire which destroyed bridges spanning the Susquehanna River has made it necessary for the West End Coal Co., across the river from Shickshinny, to place a number of large boats in service so that the mine employees living on the opposite side of the river from the mines can get to work in the morning. Over 500 men a day are taken over in small rowboats. The county and the coal company are arranging to place several ferry boats in use as soon as they can secure them.

Hazleton—H. M. Crankshaw, former manager of the Cranberry Creek Coal Co., has been retained as consulting engineer by the G. B. Markle Co. With the appointment of Chief Engineer J. B. Warriner, of the Lehigh Coal and Navigation Co., to succeed H. M. Crankshaw as manager of the Cranberry Creek Coal Co. and Alliance Coal Co., the office formerly held by Mr. Warriner was abolished and several other departments of the Lehigh Coal and Navigation Co. were merged. Mr. Crankshaw has postponed his return to England until he has completed an investigation of the Markle holdings on the North Side and has submitted a report showing the best means for extending the operations and increasing the output.

Wilkes-Barre—The Court of Luzerne has handed down appointments of mine inspectors' examining boards for Luzerne and Carbon Counties, and mine foremen's boards. The members of the mine inspectors' examining board succeed themselves for another term, being as follows: E. R. Pettebone, Dorranceton, consulting engineer of the Hudson Coal Co.; John M. Humphrey, of Wilkes-Barre, chief mining engineer of the Lehigh Valley Coal Co.; Cornelius McLaughlin, of Avoca; John Larkin, of Nanticoke; and Thomas Gallagher, of Lansford, practical miners. Few changes were made in the personnel of the mine foremen's examining boards, mainly owing to the removal of mine superintendents from one district to another.

Bituminous

Brownsville—The H. C. Frick Coke Co. is putting about 2000 beehive coke ovens out of blast this week in different parts of the Connellsville coke region and curtailing its coal output accordingly.

Savan—The tipple for the new operation of the Hess Coal Co. near here is in course of erection. The railroad siding has been graded and the public road changed, which was necessary for the erection of the tipple. A tramroad about one mile in length will be built from the mines to the tipple. Shipments will be made over the Buffalo, Rochester & Pittsburgh R.R.

Waynesburg—The Cumberland Coal Co. has purchased an interest in the J. C. Garard tract of coal land containing about 300 acres. The same company has purchased from Thomas B. Semans, of Uniontown, an interest in 19 tracts of coal land in this county for $154,876.53.

Mrs. Josephine Moore Heft, of Bridgeport, Conn., has purchased one-half interest in two tracts of coal in Jackson township from R. E. Kent and J. B. Gordon. Mrs. Heft also purchased a one-half interest in 79 acres in Gilmore township from E. C. Fordyce and Mrs. Louisa M. Fordyce.

WEST VIRGINIA

Fairmont—Construction work at the plant of the Domestic Coke Corporation, the new $5,000,000 coke byproduct concern, for the time being will be under the direct supervision of C. V. Critchfield, of Ohio, vice president of the concern. As, told in a recent issue of "Coal Age," construction work is to be resumed without delay and the installation of 60 byproduct ovens at a cost of $3,000,000 is to be rushed to completion.

Ansted—A revival of market activities has been reflected in the business of the Gauley Mountain Coal Co., whose plant is located at this place. Instead of operating its mines only three days a week the company is now able to employ its miners on an average of five days a week. At the same time the company has been able to increase its coke loadings and on a recent Sunday 22 car-loads of coke were pulled and loaded. In fact the coke output of the company is now limited only by the capacity of its ovens and the number of cars it can secure.

OHIO

Diamond—What is known as the old Kimberly mine is being reopened after being idle for a number of years. The mine is being cleaned up and it is expected to be in operation by June 1.

Bristol—The Huffman Mining Co., which has headquarters in Columbus, is busy on the work of opening a new mine on the Baltimore & Ohio R.R., near here. The company, of which T. J. Huffman is the head, has acquired 200 acres of land, on which a tipple has been built. It is expected to load coal in about 90 days.

INDIANA

Clinton—Miners of the Clinton coal field have agreed to work by the old time when the clock hands are moved forward Mar. 30. The miners say that a coal mine just before daylight is a very desolate as well as a dangerous place, especially on foggy mornings.

ILLINOIS

Carlinville—Trains on the Chicago & Alton R.R. are now run into Shoper, the new mining town opened by the Standard Oil Co. The crossing of the Chicago & Alton and the Northwestern has been completed and the first train ran Mar. 13 over the dam up to the mines.

Rutland—The tower of the Rutland coal mine has been destroyed by fire. The fire was not discovered until too late to save the structure, but the engine and boiler rooms nearby were saved. The loss is covered by insurance. The miners had not been working for several days as the boilers had been condemned. The company, the United States Coal and Coke Corporation, will rebuild.

De Soto—The Racine Co. has taken options on about 600 acres of land near De Soto and is boring holes in search of a big seam of coal. The company is really looking for the No. 5 seam of the famous coal mine at Murphysboro, and if it is found it will mean a large coal mining industry for De Soto, which now has a mine working 168 men, and another ready to start mining on a somewhat smaller scale. The Racine Co. has finished two holes and the drill is now at work on the third, which is to go deeper than the others. It is about 70 ft. to the bed of coal already being mined around De Soto.

Carlinville—The Standard Oil Co. mine on a recent day established a new record, hoisting 1212 loads, or 968 tons, which shows that the efficiency of the mine has increased greatly. While many mines in the state are idle, the Standard Oil mine here is running at full capacity. The Standard mine at Berry is producing coal and the machinery will soon all be in place for record-breaking runs. The Hunt Engineering Co., which has the contract for sinking the shaft, expects to turn over the mine to the Standard within a few days. Work is also progressing at the great mine at Shafer, and coal is being taken from both the main shaft and the air shaft in carload lots. When all the producing machinery is installed it is believed the mine will be the largest producer of coal in the world.

KENTUCKY

Whitesburg—It is announced here that the Southeast Coal Co., of Seco and La Viers, will put in a third mining plant on Thornton Creek, an important new territory being opened by a branch line of the Louisville & Nashville, a few miles out from Sergeant. It is reported that the work will soon be launched.

Central City—Two hundred miners have been thrown out of work and the operations of the Madison Coal Corporation, formerly the Central Coal and Iron Co., are at a standstill due to the loss of a big tipple by fire on Mar. 10. The blaze started from a defective flue in the weighroom, and spread rapidly. It is planned to rebuild the tipple at once. The Madison Coal Co. supplies considerable coal for the Illinois Central Railroad Co., with which it is allied, and is one of the most important company connections.

ARKANSAS

Midland—The first mine in Arkansas to be equipped with electrical undercutting machinery will soon be put in operation at this place by the Majestic Coal Co., of Fort Smith, which has recently been organized. The company own 290 acres of coal land and has leases on 300 adjoining acres in the Hackett-Excelsior vein, from which is mined some of the finest steam and domestic coal in the Southwest. The company will begin sinking its shaft not later than Apr. 1. It will be located one mile north of Midland No. 6 mine.

Personals

A. L. Learned has been appointed assistant to the president of the Lehigh Coal and Navigation Co., Lansford, Penn.

T. E. Barry, of Akron, Ohio, former union passenger agent, has been elected vice president of the Kendall Coal Mining Co. of Cleveland, Ohio, and has given up his connection with the Pittsburgh Coal Company.

James Conner, formerly mine foreman at the Freeport No. 1 mine at Dunbar, Penn., has been transferred to the Ferguson mine superseding **George Stockdale**, who has been granted a leave of absence for a much needed rest.

E. A. Holbrook, superintendent of the Urbana station of the Bureau of Mines, has been called to Washington to act as chief mining engineer of the bureau during the absence of George S. Rice, who is in Europe studying mine rehabilitation.

F. M. Sackett, of the Byrne & Speed Coal Co., Louisville, Ky., who served as Kentucky Food Administrator during the war, was the recipient of an unusual honor at an "after-the-war conference" in Lexington recently, being awarded a medal for distinguished service during the period. A medal was also awarded to E. W. Hines, chairman of the State Council of National Defense. The medals were awarded through the American Social Science Association.

W. D. Hamer, representative of the Electric Service Supplies Co., Philadelphia, Penn., has been transferred from his former territory in the Middle West to a southern territory with headquarters in Atlanta, Ga. He has been connected with the company for 14 years. Prior to 1905 he was employed in the stores and engineering department of the Lehigh Valley Coal Co. In 1917, with the courtesy and coöperation of the Nashville Railway and Light Co., he proposed and developed the first prepayment car operated in the South. Mr. Hamer also is inventor of the well known Keystone triangle arm.

Obituary

James M. Poyner, a prominent electrical engineer, for ten years connected with the Baltimore office of the General Electric Co., died, at the age of 37, of influenza, after an illness of ten days at Charleston, W. Va., on Mar. 3.

Charles E. Hurd, aged 33, formerly of Roswell, Penn., died in France in February of pneumonia. He had enlisted in the Engineers a year ago, and after a short training went to France. At the time of his enlistment he was employed by the Merchants' Coal Co. as a mining engineer.

William H. Yawkey, of New York City (formerly of Detroit), died Mar. 5 in Augusta, Ga. He was extensively interested in West Virginia coal properties, particularly in Boone and Logan Counties, where, it is said, in association with Colonel Freeman, of Huntington, 40,000 acres in all were owned. Mr. Yawkey was one of those prominently interested in the organization of the Big Creek Development Co., a large concern which recently passed into the control of others. He was at the time of his death one of the officers of the Pond Fork Coal Company.

W. R. Wilburn, general manager of the various mines in the Pennsylvania bituminous fields and the West Virginia field, of the Madeira-Hill Coal Mining Co., died at his late residence in Philipsburg, Penn. on Friday, Mar. 7, 1919. Mr. Wilburn was well known as an expert in mining, and was respected and liked by his fellow operators.

Mr. Fairbanks, of Chicago, Ill., for many years employed as the legal advisor of the W. P. Rend coal interests, died on Mar. 7. The Rends in particular, and the coal trade in the Middle West in general, feel that they have lost a valuable friend. Mr. Fairbanks was connected with the Rends for the last twenty-five years, and during that time has made a great number of acquaintances in the coal industry, both in the East and in the Middle West. Mr. Fairbanks' death is deeply regretted by a host of his friends, as his absolute reliability and his lovable character had endeared him to all who knew him.

Industrial News

Chicago, Ill.—The Roberts & Schaefer Co., engineers and contractors, are sending free of charge to anyone desiring it an exceedingly practical, vest pocket rule handy for scaling blueprints.

Mahanoy City, Penn.—The Lehigh Valley R.R., operating the Park Place Colliery, located near Mahanoy City, has placed into effect a new seven-hour per day working schedule for an indefinite period. A total of over 800 persons are employed at the mine.

Whitesburg, Ky.—A strike at the mines of the Stoner-Elkhorn Coal Co., in the Beaver Creek section, has been settled satisfactorily to the company. One of the reports stated that an increase in the wage scale was made, but it is understood that the strike was over operating conditions, and not over the wage question.

Birmingham, Ala.—The tipple of the Empire Coal Co. at Empire, Ala., will be completely remodeled and equipped with car hauls, revolving dumps, Marcus picking table screen and loading boom, the installation of this equipment having been contracted for with the Roberts & Schaefer Co., of Chicago.

Chicago, Ill.—The Chicago Pneumatic Tool Co. announces that it has moved its Detroit office from 236 Hancock Ave. to 502 Farwell Building. The Boston office of the company has been removed to 182 High St., while an office and warehouse has been opened at Tulsa, Okla., and at El Dorado, Kansas.

Buffalo, N. Y.—J. H. Hillman & Sons Co., of Pittsburgh, are opening an office at 428 Prudential Building, with Thomas B. Dunbar, formerly with B. Nicoll & Co., in charge. J. Frank Pinner, an old Buffalo coal man, has taken an office in his own name at 300 Prudential Building. J. J. Eagan has moved his coal office to 1224 Prudential Building.

Louisville, Ky.—The mine operators of the Tennessee Central District have made a plea for a reduction in the present coal freight rates to Sheffield, Tuscumbia and Florence, Ala., from $2.20 to $2, to accord with rates from the Coal Creek and Glen Mary sections of Tennessee. This plea will be heard in Louisville on Mar. 26, when the Louisville District Freight Traffic Committee, of which J. M. Dewberry, is chairman, will hold a session. At this same session grain, lumber and other rates will be examined.

Columbus, Ohio—According to a recent statement of John Moore, president of the Ohio organization of miners, 15,000 miners in Ohio have been idle since Jan. 1. This is almost one-third of the total miners, as it is estimated that there are 50,000 miners in the state. Moore attributes the lack of work to the suspension of many business activities, the attitude of the U. S. Railroad Administration in not buying Ohio coal and in the fact that the markets of Indiana and Michigan have been lost temporarily. No relief is looked for until the opening of the lake trade.

Charleston, W. Va.—Valuable coal deposits in Fayette and Nicholas Counties will become accessible to the market through the building of the Gauley & Eastern Ry., which is now nearing completion, the road having cost about $450,000. The new road will be operated between Gauley Bridge and Belva—a distance of six miles—and will connect with the Kanawha & Michigan Ry. at Belva. It will be ready for operation by the middle of April. The Kanawha Collieries Co. and the Beech Glen Coal Co. expect to begin operations about that time.

Kansas City, Mo.—An increase of 10c. a ton on coal shipments from Springfield, Mo., to Kansas City, which is scheduled to go into effect soon, will be protested by commissioners of Kansas City, Kan. The increased freight rate was brought about by the Kansas City district freight traffic commission. A resolution of protest has been drawn up, stating if the rate is put into effect Kansas City and vicinity will pay from 10 to 50c. a ton more for coal than at present and more than any other neighboring districts.

Chicago, Ill.—The Sullivan Machinery Co. has established a branch sales office and warehouse in Mexico, at Edificio Oliver No. 3, Mexico City. Joseph F. Bennett, for a number of years sales engineer in Mexico, associated with the El Paso branch of the company, has been placed in charge of the Mexico City office. Sullivan air compressors, rock drills, hammer drills and drill sharpeners will be maintained in stock, together with parts and supplies. The office will serve central and southern Mexico, and that part of the states of Sinaloa, Durango, Coa Huila and Tamaulipas, lying south of the 26th parallel of latitude.

Jefferson City, Mo.—A bill has been introduced in the House here amending the Missouri anti-trust laws so as to permit coal dealers to arrange, under the supervision of the Attorney General of the state, the cost of conducting the retail coal business. The Attorney General will then decide what a fair margin of profit is. This is practically a continuation of the Government supervision of the distribution of coal, only it will be under the state instead of the Federal Government. An amendment of the anti-trust law has been introduced at the request of E. J. Wallace, who was advisor to the St. Louis Fuel Committee, and the feeling here is that it will go through.

Charleston, W. Va.—Five mine rescue stations will be established in West Virginia by the Department of Mines at a cost of $20,000. The location of such rescue stations has not yet been definitely decided upon, the department wishing to consult the operators of the state with a view to having such stations placed where they will be the most useful and serviceable. Preliminary plans indicate that not only will the coal men of the state fully coperate with the department in this matter, but that they will actively aid in the maintenance of the stations. Some have even gone so far as to promise that they will furnish a part of the equipment, such as ambulances, etc.

Louisville, Ky.—Western Kentucky coal operators who are alarmed over the efforts of some of their associates to reduce coal prices, have received word that the mine workers, through their unions will oppose any attempt toward reduction. The miners naturally do not favor reduced prices because they known that price reduction will mean wage reduction. The unions have agreed that their men will not work for any operator who lowers wages. On the other hand, western Kentucky operators are planning to abide by the prices indicated as a standard by the Director-General of Railroads. Under this plan screen coal is selling at $2.60 and mine-run at $2.35. According to information gathered in Louisville, it is generally believed that miners throughout the state are well united and that they will strike if there is any attempt at wage reduction.

Du Quoin, Ill. The annual meeting of the Southern Illinois Mine Superintendents Association was held in this city Saturday, Mar. 8. An elaborate banquet was given the delegates at the St. Nicholas Hotel, after which many splendid addresses were made by various state officials and others. James Dunn, of West Frankfort, president of the association, was chairman of the meeting, assisted by Bruno Schulter, of Sesser, who is secretary-treasurer. Dr. F. C. Honnold, of Chicago, secretary-treasurer of the Coal Operators' Association of Franklin, Williamson, Saline and Perry Counties, in the principal address of the meeting expressed the need of better screening and cleaning of southern Illinois coal and stated that if this was done the market for the coal would be much better. Joseph C. Thompson, formerly state mine inspector, and now director of the Department of Mines and Minerals, spoke on "Safety in Coal Mining." Other addresses were made by Walter S. Burris, former state mine inspector, James Forester and Theodore S. Cousins.

MARKET DEPARTMENT

Weekly Review

Coal Market in General Lacks Snap—Half Time at the Mines May Lead to Labor Troubles—Consumers Who Hold Off in Their Buying May Have Cause for Regret Later—Anthracite Situation Still Poor

THOUGH signs of activity are by no means wanting, the coal market in general lacks snap. The brakes are still being applied to industry; and until the wheels are unlocked the coal mines perforce must continue to work only half time, and mine employees must continue to complain that the shorter week does not enable them to meet the high cost of living (if they do not take it into their heads to evince their dissatisfaction through the well known medium of the strike).

Shortsighted consumers are still of the belief that coal prices will go lower if they hold off their purchases for a while longer, in spite of the fact that every grain of common sense they possess should influence them to the contrary. If labor troubles materialize at the mines, and the possibility is by no means remote, there are going to be many consumers who will wish they had bought coal while the buying was good. Prices cannot come down. The closing of a great number of mines should be proof conclusive that no indiscriminate price-cutting will be practiced by the operators. Either they do business at a reasonable profit or they do no business at all.

The weekly production of soft coal is still hovering around the eight-million-ton mark, only 8,058,000 net tons being the output for the week ended Mar. 8. For the coal year to date the total tonnage mined amounts to 533,579,000 net tons, which is but 16,613,000 net tons greater than the output for the same period of the previous coal year.

As yet the anthracite trade has not reacted to the announcement that prices would not go lower on Apr. 1. Dealers and consumers will doubtless commence to lay in stocks before May 1, when an increase of 10 cents a ton goes into effect. The only demand for anthracite seems to center around stove and nut coal, while a fair amount of pea is also being sold. Domestic demand there is none, and it is natural to expect a season of the keenest competition in the steam trade.

Anthracite production during the week ended Mar. 8 is estimated at 989,000 net tons, which brings the output for the coal year to date to 88,111,000 net tons.

WEEKLY COAL PRODUCTION

The production of bituminous coal during the week ended Mar. 8, is estimated at 8,058,000 net tons, and is approximately the same as the output of Mar. 1, which was estimated at 8,085,000 net tons. The current week's output, however, falls 3,559,000 net tons below the output during the week of Mar. 9, 1918. The daily average per working day during the week of Mar. 8 is estimated at 1,343,000 net tons, as against 1,815,000 net tons for the coal year to date and 1,758,000 net tons for the same period of last year. Total production for the period Apr. 1, 1918, to Mar. 8, 1919, is estimated at 533,579,000 net tons, and is but 16,613,000 net tons in excess of the output for the same period of last year.

Anthracite production during the week ended Mar. 8 is estimated at 989,000 net tons, as compared with 1,102,000 net tons during the week ended Mar. 1, and 2,099,000 net tons during the same week of 1918. The daily average per working day is estimated at 165,000 net tons, and is considerably lower than the average production per working day for the coal year to date, estimated at 300,000 net tons, and for the 1918 coal year, ended Mar. 8, estimated at 317,000 net tons. Production of anthracite from Apr. 1 to Mar. 8 is now estimated at 88,111,000 net tons and is 5,160,000 net tons below the production for the same period of last year.

Carriers' reports for the week ended Mar. 8 show increased loading in central Pennsylvania, Tennessee and Kentucky, and in the central and far west states. All other districts report a slight falling off compared with the week of Mar. 1. For the calendar year to date, loading in all districts is considerably behind that of last year.

Shipments of bituminous coal to New England from the tidewater harbors during the week ended Mar. 8 are estimated at 169,384 net tons, as compared with 128,885 net tons during the week of Mar. 1. The improvement occurred at New York, Philadelphia and Hampton Roads, no tonnage being loaded at Baltimore either this week or last. Shipments by rail were not reported for the week of Mar. 8.

Shipments of bituminous coal from tidewater harbors to all points during the week ended Mar. 8, estimated at 454,543 net tons, declined considerably compared with the tonnage loaded during the week ended Mar. 1, estimated at 567,782 net tons. While decreases occurred at all harbors, the decrease at Hampton Roads was slight, amounting to approximately 6200 net tons.

The production of beehive coke in the United States, during the week ended Mar. 8, is estimated at 440,118 net tons, and was but slightly in excess of the production during the week ended Mar. 1, estimated at 438,832 net tons. The current week's production, however, was far below that of the week of Mar. 8, 1918, when the output reached 595,992 net tons. Pennsylvania and West Virginia were the only states in which production during the week of Mar. 8 exceeded the output of Mar. 1, while all states report a lower output than was recorded during the corresponding week of 1918. The average production per working day during the week ended Mar. 8, is estimated at 73,353 net tons, as compared with the average production per working day of 82,419 net tons for this calendar year to date, and 90,769 net tons for the same period of last year.

BUSINESS OPINIONS

Marshall Field & Co.—Current wholesale distribution of dry goods is running considerably less than for the same week of 1918. Road sales for at once delivery are not up to the large volume of the corresponding period a year ago. Salesmen are now getting on the road with Fall lines and an excellent advance business is anticipated. More merchants were in the market, buying for their immediate needs. Retail business continues most satisfactory. Collections are normal.

The Iron Age—New business has come in in the past few weeks at only a fraction of the February rate of operations. With most independent companies March orders have not been over 20 per cent of capacity. It is also to be considered that in some districts, notably Pittsburgh, large rollings for stock were made in January and February. It is thus to be expected that output will fall off in March and April, with progressive reductions in working forces at steel works and rolling mills.

American Wool and Cotton Reporter—The wool market seems to be particularly strong in pulled and scoured wools, as shown by the demand at the Government auctions on Mar. 10 and 11. It is evident that mills have received orders and are endeavoring to purchase wools with which to fill these orders. Activities in the Middle West on the new clip have already begun, as it is reported that a large Boston operator in fleeces has purchased wool on the sheep's back at 50c. per pound.

Dry Goods Economist—Two reasons are given for the continued prosperity of the dry goods trade: First, the great majority of the people are still in need of new goods, new clothes or new furnishings for the home, and are able to satisfy that need; second, the approach of Easter, now only five weeks away, has given emphasis to this need and thereby stimulated the movement of goods. Labor unrest continues in many centers and has hampered the production of various commodities and their transportation.

Bradstreet's—While inclement weather and bad roads are a bar to seasonal trade expansion and price uncertainties still hold back buying and industrial operations, the week's report summarized is one of moderate but still definite progress toward better things. Favorable features of the week are the continued strength of the securities markets, the settlement of shipyard strikes and the resumption of considerable textile machinery in New England, although at below maximum rate, the net result being a reduction in the total number of unemployed.

Atlantic Seaboard

BOSTON

Improvement very gradual. More confidence in prices. High range on quality grades a feature. Contracts being closed, but for small tonnages. Coastwise freights slowly reduced to working basis. Hampton Roads shippers watchfully waiting. Pennsylvania coals now accessible by water. Scattered inquiry for April shipment. Anthracite continues dull. Only hand-to-mouth buying except on special grades. D. & H. plans. Rumored that Reading fleet will be restored to Philadelphia.

Bituminous—A slow but steady improvement is noticeable throughout the trade. There is today an interest in quotations that has not been manifest since the summer of 1917. From all parts of the territory there are inquiries for coal in small lots, a condition that usually forecasts a broadening market later. Naturally, under present circumstances, this renewal of inquiry is almost wholly confined to coal by the all-rail route and operators are keeping in close touch with developments from day to day. Several operations where the output is favorably known in New Eng-

land have increased their tonnage over the January and February marks, and from all standpoints steam coal is in better request.

It follows as a direct result of such a market that buyers are listening more respectfully and that there is distinctly more confidence in prices than at any time since Nov. 11. It is being impressed upon steam-users that there is not really a very large tonnage of high grade coals available for New England, and with all the uncertainty over tidewater prices it is easy to see that some may over-stay, if buying is postponed to too late a day. The amount of coal in storage here is still very large, but inroads are being made, and there is in the aggregate quite a considerable market from plants where there is a desire to get superior coal to help burn some of the mongrel lots shipped last season. At $2.95@3.05 there is not much murmuring even on second-rate coals, provided they are of known quality, and something of a tonnage on "B" and "D" coals has been placed at about these figures.

One outstanding feature of the all-rail market is the price level that No. 1 Pennsylvania coals now command. Several sales have been reported on the choice grades from Wilmore Basin at $3.40@3.50 per net ton at the mines, and one quotation of $3.58 was heard the past week. Some grades from Clearfield County are being sold down to $2.35 per net ton, but as a rule the inquiry for these is less active. The gas coals, even of those of highest grade, are making only light shipments, so well stocked are all the plants in this territory. An energetic effort is made to place gas slack at $2.30@2.40, but the present market affords little response.

What contracts have actually been closed are on the $2.95@3.10 basis for coals from Somerset and Cambria Counties. So far, however, the tonnages have been small, for the larger buyers will not be ready to enter the market until May or June, at the earliest. A few consumers who have usually bought Pocahontas and New River through Boston and other rehandling plants have made purchases all-rail, but the greater number are still awaiting developments on the tidewater situation.

In respect of coastwise freights the situation is settling down quite rapidly. A week ago $2.50 was considered the rate from Hampton Roads to Boston, but at this writing it is virtually admitted that $2 is all the market will pay, even on bottoms owned or operated by the Shipping Board.

The Hampton Roads agencies are following a policy of watchful waiting for the present. There is no buying of any consequence today, even on the prospect of $2 freights, for it is felt that by the time New England industries are ready to enter the market on any comprehensive scale that marine freights will have settled down to something like a workable basis. The tonnage for New England is still very light, and on the part of rehandlers here there have been some extraordinary efforts to move coal inland to make room for the few cargoes that are coming forward each week.

One of the recent developments of the Boston market is the reappearance of Pennsylvania coals by water. This is induced by the relatively low rates that now prevail on barges from New York, $1.25@1.35 being the rate. The New York harbor strike has somewhat affected the movement of this transportation, but the demand here has not been urgent enough to cause any stiffening in rates. Several cargoes have lately been sold at $6.50 per gross ton alongside Boston, the coal being furnished from Pool 10, and one sale is reported at $6.10. There is at least a scattering inquiry for April shipment, especially from some of the utilities who have not yet seen fit to open the subject of contract. The steam railroads are making practically no purchases, their supply in storage being still very large. The Boston & Maine is understood to have upward of 350,000 tons in storage, or more than 90 days' reserve, at the present rate of consumption.

Bituminous prices at wholesale are about as follows, f.o.b. mines and at loading ports, per gross or net ton as designated:

	Clearfields	Cambrias & Somersets
F.o.b. mines, net tons	$2.15@2.75	$2.80@3.50
Philadelphia, gross tons	4.20@4.90	5.00@5.55
New York, gross tons	4.50@5.25	5.35@5.95
Alongside Boston (water coal), gross tons	6.10@6.85	6.90@7.80

Georges Creek is quoted at $3.20 f.o.b. mines per net ton.

Pocahontas and New River are unchanged at $4.70@5.25 f.o.b. Norfolk and Newport News, Va., for spot coal, the former Governmental differential of 35c. in favor of New River being fairly well maintained. Alongside Boston the present gross ton range would be $7.15@8.10.

Anthracite—The recent firm announcement that no reduction in prices at the mines would be effective and that on the other hand prices would be advanced by the companies 10c. per ton per month up to and including Sept. 1 has been used as an argument to get coal forward as fast as it could be had, but the retail dealers are not responding. At tidewater there is a strong feeling that freights will have to be reduced from the present arbitrary level on boats under the jurisdiction of the Railroad Administration, and all-rail there is a tendency to make haste very slowly. There is a very natural desire to get cleaned up of all the poor coal still remaining from last year's shipments, and then again local price situations, as left by the different fuel committees, are in such ragged shape that in many communities there will not be the inducement to take in coal during the spring months. In consequence there is very little buying.

Considerable interest has been aroused here over the rumor that the Reading fleet will be restored to Philadelphia.

NEW YORK

Anthracite market stronger since price announcement. Dealers in the market for coal, but harbor strike delays deliveries. Dealers expect improved conditions. Dissatisfaction reported among miners. Steam coals shorter. Embargoes prevent local docks being flooded with bituminous. Buyers ready to buy when necessary to refill bins. Line trade active and prices steady.

Anthracite—There is stability in the situation now that the coal trade knows what to expect in the way of prices. While everyone seemed to know that there would not be any reduction on Apr. 1, and that there would follow five monthly advances of 10c. each, buyers did not feel sure of themselves and hesitated to make any more purchases than was absolutely necessary, although many wholesalers had agreed to bill coal at the April prices.

The full effect of the price announcement has not yet been felt in this market because of the marine strike, but the ten-day tie-up of the coal boats and tugs has resulted in retail dealers supplies being reduced to less than a week's supply, and much less if the weather becomes suddenly cold. Wholesalers look for a decidedly brisk market when conditions in the harbor become normal, but which may not continue longer than it is necessary to refill the dealers' bins.

Inquiries here indicate a much better situation, not withstanding slow deliveries. Orders are being received in better shape and shippers said similar conditions existed in other sections of the country. From the West come reports of the lack of anthracite and the desire of consumers for a resumption of conditions as they existed before the war and prior to the supervision of the Fuel Administration. It is expected there will be a heavy demand for hard coal from those sections and shippers look for a busy season.

The slow production due to the unusual winter and the closing down of many washeries has caused a shortage of coal at the docks, but not to an extent to cause any alarm if there should come a sudden heavy demand.

More anxiety is felt over the anthracite steam coal situation than over the domestic sizes. Every householder has at least some of the latter sizes on hand, but users of the steam sizes, particularly buckwheat, must receive a certain tonnage daily, especially the big office buildings. With many of the mines and the washeries closed at least three days a week these coals have become scarce and some shippers are showing anxiety as to the tonnage they may receive in the future. There are some wholesalers who believe there should be a reduction in the prices for these coals if efforts are to be made to regain some of the trade taken over by bituminous coal sellers because of the lower price at which the latter can be obtained.

There has been some inquiry regarding contracts for the anthracite steam coals, particularly barley, quotations on the latter ranging from $1.80 to $2 for the better grades.

Current quotations, White Ash, per gross tons, f.o.b. Tidewater, at the lower ports are as follows:

	Mine	Company Circular
Broken	$5.95	$7.80
Egg	5.85	7.70
Stove	6.10	7.95
Chestnut	6.20	8.05
Pea	4.80	6.55
Buckwheat	3.40	5.15
Rice	2.90	4.65
Barley	2.40	4.15

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—Movement of coal has been slow here because of the harbor strike, but trade along the line has been active and a much better market exists. Prices have had but little effect upon conditions. Salesmen report that the reason for a not more active condition is either no work in the factories or full bins.

Buyers are realizing the futility of expecting cheaper coal with the present cost of production and seem willing to make purchases if they can secure the coal wanted. Along the line consumers are holding fast to the grade wanted and in most cases refuse any substitute.

The ending of the trouble in the New York harbor is expected to stimulate trade. Many bins are nearly empty as a result of the strike and manufacturers are becoming uneasy.

The placing of embargoes on shipments to this port has saved the docks from being over-stocked; nevertheless salesmen say the line trade has been able to absorb nearly all the coal produced and that the mines are working a trifle steadier than they did a few weeks back.

While there have been numerous inquiries concerning contracts the closing-up process has been slow. Buyers are hesitating about signing up for the twelve months ahead because they feel prices are sure to come down. To offset this it is reported some operators are including in their contracts a clause providing for a readjustment of prices at certain periods.

Quotations on various grades of bituminous coal for spot and contract delivery, are:

	Spot	Contract
South Forks	$2.90 to $3.50	$3.10 to $3.50
Cambria County (good grades)	2.80 to 3.00	2.95 to 3.00
Clearfield County	2.65 to 2.95	.....
Reynoldsville	2.65 to 2.95	2.85 to 3.00
Quemahoning	2.85 to 3.10	2.95 to 3.10
Somerset County (best grades)	2.80 to 2.95	2.95 to 3.10
Somerset County (poorer grades)	2.50 to 2.75	2.75 to 2.95
Western Maryland	2.50 to 2.75	2.65 to 2.85
Fairmont	2.10 to 2.35	2.35 to 2.50
Latrobe	2.25 to 2.40	.....
Greensburg	2.35 to 2.40	.....
Westmoreland ¾-in.	2.60 to 2.75	2.65 to 2.75
Westmoreland run-of-mine	2.40 to 2.65	2.40 to 2.65

PHILADELPHIA

Anthracite continues dull. New printed price circular sent out. Announcement fails to improve conditions. Much discussion as to permanence of price plan. Consumers hold back, still expecting reduction later. Credits becoming a problem. Retail price-cutting grows. Pea difficult to handle. Some activity in steam-coal contracting. Bituminous quiet. Strong demand for high-grade coals. Increased contracting. Railroads cut down fuel supplies.

Anthracite—It is not likely that the operators expected the early announcement of April prices would bring a rush of March business. They are probably too familiar with conditions to believe the coal-buying public would take kindly to a new schedule that does not permit the usual spring reduction. While the selling forces had endeavored for weeks to prepare the dealers in advance, by intimating what the new prices would be, the circular issued by the largest operating company, which was dated Mar. 10, but for some reason was held back and not received by the trade until the morning of the 13th, came as somewhat of a shock. This was probably because the price question was thereby squarely put up to them to explain to their trade. To put the responsibility entirely on the operators does not seem to satisfy their customers, and they are having a difficult time explaining "why."

That the circular referred to quotes prices for April and May only leaves room for doubt in many minds as to the summer schedule. It quotes the present March circular for April "subject to an advance of 10c. per ton effective May 1." In other words, the circular fixes the wholesale prices until June 1. Before that time many things might happen to prices. To begin with, there is much discussion as to miners' wages, it being firmly fixed in the minds of

all coal interests that no price reduction can be expected with wages fixed as at present. Certainly so long as conditions only warrant working the mines three days a week there can be no reduction.

Another cause of anxiety to the retailer is the question of credits. While the dealers can hardly expect to continue on the cash basis they enjoyed the past year, they now fear that when they try to force sales they will be expected to place accounts on their books. Some call attention to the fact, for instance, that three cars of coal often cost $1000, and with daily settlements for the freight the business calls for such a large investment that they cannot extend credits as in the old days. It is possible that the larger buyers will this season call upon the shippers to be lenient and not insist upon 30-day settlements. Right at this time it is known that all shippers have more money standing on their books than at any time during the past two years.

We hear that some of the more prominent dealers are considering asking the shippers for coöperation in their efforts to eliminate the price cutters. It seems they would like the producers to treat with indifference the orders of a few who have become notorious in this respect. It is a difficult matter to handle in that way, and we do not really expect to see anything of consequence come from the movement. This week one dealer announced his pea coal price as $7.75, or $1.30 per ton below the regular rate.

The only demand for sizes seems to center around stove and nut, with a fair amount of egg asked for. Pea continues to be a most serious problem. The dealers continue to have large stocks of it on hand with hardly any movement at all to their customers. They are still hoping for some cold days throughout March and April, with the idea that they may thus be able to move some of their stock. It is becoming an even greater problem with the operators, for while they can move the other sizes fairly well on the restricted working time, they are hard put to it to get rid of pea.

No action has been taken in regard to prices on steam sizes, nor on broken, as they are not mentioned in the only circular that has been issued and we take it for granted that prices are to remain unchanged for the present. With a poor domestic market we expect to see a season of the keenest competition ever experienced here for the steam trade. We have heard already that one of the largest companies is making up contracts on the steam sizes, although they have not stated publicly the prices which they expect to get. Apr. 1 is the usual contracting season for them, and we think they will pursue the practice of making up the contracts for their old customers in advance and then presenting them for their decision.

Due to the short working time there has been some difficulty in filling buckwheat orders by the larger companies, although some of the independent operators continue to offer this size around $2.75. The big companies are also going into their storage yards at times for rice coal in order to fill some of their orders.

The price per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken	$5.95	$7.30	Buckwheat	$3.40	$4.45
Egg	5.85	7.20	Rice	2.90	3.80
Stove	6.10	7.45	Boiler	2.70	3.70
Nut	6.20	7.55	Barley	2.40	3.30
Pea	4.80	6.05	Culm	1.25	2.15

Bituminous—The bituminous trade is simply drifting along with the hope that industrial improvement may come to the rescue of the trade. As it now stands it is not believed that the mines on an average are making 30 per cent. of full working time.

An interesting feature of the trade lately has been the inquiry for high-grade coals from New England consumers. This is due to the fact that boat freights are so high from southern ports that it makes the use of coal from that territory almost prohibitive. Due to this condition there has not been the least trouble in maintaining the full price on the good coals here and tonnage is actually scarce.

If anything there has been an increase in contract business, which is being closed at figures running from $2.90 to $3.35 per net ton. Practically all this business has been closed to date as of Apr. 1 and some also May 1.

There is very little activity whatever in the spot coal market, although on low grade coals there are plenty of offerings with very few sales made. Sometimes there are fairly heavy price cuts to move occasional cars.

There is very little new tonnage going to the railroads for fuel, as the concerns who had contracts with them have shipped so heavily that the roads have been compelled to stop shipments in numerous instances.

BALTIMORE

New elements of strength noted in the bituminous market. Inquiry line grows steadily and prices are a little firmer. Hard coal business one largely of speculation as to the next spring schedule.

Bituminous—While general business in this section still wavers as to its scope for the future, awaiting apparently for some settlement of the governmental railroad control and other big reconstruction problems, there is a growing evidence of confidence for the days to come shortly and with it a resumption of plans that mean coal consumption. Then a number of plants are running low on supplies put in heavily in the months past, and the total result is that there is a steadily growing line of inquiry in practically all the coal offices here.

In the majority of cases the call is for high grade coal, this requisite being considered above that of price where the latter is near the old Government maximum. Of course there are some consumers gunning around for good coals at very cheap prices. Most of these have been encouraged by being able to pick up some coal at sacrifice. This was coal caught on demurrage and does not by any means represent the market.

The general run of trading here on fair to good coals was on a mine basis at tide around $2.65 to $2.85. Specialized coals in some cases sold higher. During the week the trade largely discussed the conference at the Hotel Shoreham, in Washington, between coal shippers and Government officials, concerning the future of the Tidewater Exchanges. Some interests have been for their complete abolition and some for their maintenance in full. Others favor some mid-way arrangement that would protect shippers against excessive losses on a high demurrage short-free-time basis where there was no interchange of coal at tide. The Maryland Jobbers' Association sent delegates to the conference to contest a complete wiping away of the pool on Apr. 1.

Anthracite—The hard coal men are merely marking time. Sales are light and the public on the one side awaits lower prices in the spring and the coal men await a new schedule which it is confidently expected will be at least as high as the present. Local newspapers have warned that little cut is expected and point out the considerable difference in the present retail prices and those of last April. Coal men point out that the public and the daily press fail to consider that the Government forced the present price by jumping freight rates and miners' wages, and that the coal men are getting no more, and in some cases less, than they did under the old schedules.

Lake Markets

PITTSBURGH

Contract season brings little activity. Tentative contracts considered. Production remains light. Prices well maintained.

The near approach of the conventional contract season for coal has brought very little increase in market activity. With few exceptions buyers are disposed to hold off and if they evince any willingness at all to enter into negotiations it is usually on the basis of seeking some other arrangement than the usual one of buying coal at a flat price for the twelvemonth. The course that operators had mapped out for themselves, that of simply adhering to recognized prices, is a very simple one, and there seems to be no disposition to depart from it. There is nothing out of line, however, in making an arrangement whereby coal will be shipped regularly and billed at the recognized market price from time to time.

Current demand for coal has not noticeably improved, as a whole. While stock piles have been running out there is on the other hand lighter consumption in several direction. The domestic demand, of course, is about over. There has not been much winter in this district and the time for wintry weather is now past. As to the steel industry's coal consumption, it is decreasing materially from week to week although it is still quite heavy, probably about 75 per cent. of normal. The independent steel makers are not doing as well as that, but the Steel Corporation subsidiaries are doing better. They are not a coal market factor, however. Pittsburgh district production continues at 25 to 30 per cent.

The market remains fairly steady at $2.25@2.35 for steam mine-run, with 1¼-in. domestic at but little more, while good grades of ¾-in. gas coal run $2.50@2.70, depending on grade, all per net ton at mine, Pittsburgh district.

TORONTO

Demand continues very quiet. Dealers and consumers well stocked up. Few shipments coming forward. Industrial readjustment slow.

The demand for coal of all grades remains very light, as owing to the remarkably mild winter most consumers who had laid in stocks still have supplies on hand. The yards are well stocked up, and but few shipments are now being received from the mines. The readjustment of plants lately engaged in the production of munitions to commercial work is proceeding but slowly, so that there is no noticeable increase in the call for bituminous. Smokeless coal is practically off the market, but dealers anticipate a good demand for it later in the season.

Quotations for short tons are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$11.50
Pea	10.00
Bituminous steam	8.25
Slack	7.25
Domestic lump	10.00
Cannel	13.00
Wholesale f.o.b. cars at destination:	
Three-quarter lump	6.25
Slack	5.25

BUFFALO

Coal still waiting for other business to move. Production exceeds sales. Bituminous mines idle most of the time. Loading anthracite into lake vessels.

Bituminous—The trade still languishes. Consumers appear to be agreed that they can reduce prices if they hold off. Some of them refuse to buy because they have a supply, often exposed to the weather, and they want to use it up as soon as possible. The shippers find little satisfaction in urging them to buy and report that it is useless to offer coal at a reduced price. The consumption is not heavy enough to force much buying and so there is not much to do but wait.

The bituminous prices are nominally unchanged. There is some cutting, but it is not as extensive as might be expected and does not affect the general firmness much. Quotations: $4.65 for thin-vein Allegheny Valley all sizes, $4.45 for Pittsburgh and No. 8 lump, $4.20 for same mine run and slack, $5.65 for smithing and smokeless, $5.60 to $6.10 for cannel, all per net ton, f.o.b. Buffalo.

Anthracite—The demand is light, especially since all fear of severe weather is now past. The consumer will no doubt buy some against the coming winter before May 1, but that is too far away to worry him now. The shippers are still finding coal coming out of the mines faster than they can sell it and are storing it wherever they can. Quite an amount of demurrage is said to have been paid at various points.

The prospective dullness of the lake trade is not favorable to a good movement. Vessels are taking cargoes here, as they often do in March, but as a rule they insist on sailing at their own option, instead of the option of the shipper, which means that the sailing may be delayed some time after the general opening of navigation. There does not appear to be any market for the coal at upper-lake ports at present.

The city prices for anthracite remain as follows:

	F.o.b. Cars, Gross Ton	At Curb, Net Ton
Grate	$8.55	$10.25
Egg	8.45	10.20
Stove	8.70	10.10
Chestnut	8.80	10.50
Pea	7.00	9.05
Buckwheat	5.70	7.75

With an addition of 25c. per ton to the car price for loading on lake vessels.

CLEVELAND

Several lake shippers in the No. 8 district are preparing to operate their properties full time beginning Apr. 1. The steam coal market, generally speaking, continues extremely dull, with slack perceptibly weaker.

Bituminous—Stockpiles at the lower industrial plants in northern Ohio are beginning to look ragged, but plant executives appear deaf to all advice that they be careful lest when they seek to restock coal be less plentiful than it is today.

The attitude of users is that when the time to replenish comes prices surely will be no higher than today, and that the wise policy is to work off as soon as possible all the low-grade coal they were compelled to accept last summer. As a consequence, 40 per cent. operations at eastern and southern Ohio mines continue to be the answer.

Slack is growing weaker, and may be had for $4.55 to $4.90, delivered, short ton, in Cleveland. Mine run for both the No. 6 and No. 8 grades is holding firm at $4.55 and $4.90, respectively. The retail trade continues to do obeisance to the continued warm weather.

Anthracite—Like domestic grades of bituminous, anthracite is sluggish. The cold spell of last week, which by now has succumbed to a mild wave, forced consumers to dig into their piles but has brought no buying.

Lake Trade—Lake coal shippers have been definitely informed by the Federal Railroad Administration that the present three-day demurrage rule has been abrogated and five days' free time will be allowed on cars at Lake Erie ports, with demurrage beginning the sixth day at only $1 a day instead of $3. This clears the boards for the 1919 lake trade, which is fast getting into full swing. Operators and railroad representatives have agreed that while general pooling of cargo coal will be discontinued, shippers will pool coal voluntarily where possible in order to release cars. The Ore and Coal Exchange, with headquarters at Cleveland, which conducted the 1918 lake pool, will be continued, with Herman M. Griggs again manager.

Coal is coming forward to Lake Erie ports in good shape, and due to the congestion of lake steamers at Buffalo, to hold winter storage grain for the Government, cargoes are in excess of carriers. Four steamers are being loaded at Cleveland and several at Buffalo and Ashtabula for the first trip to the head of the lakes.

Quotations on coal in Cleveland in net tons, delivered, are as follows:

Anthracite:	
Egg	$10.80 to 10.95
Chestnut	11.00 to 11.10
Pocahontas:	
Lump	7.50
Mine-run	7.20
Domestic Bituminous:	
West Virginia splint	7.15
No. 8 Pittsburgh	6.35
Massillon lump	7.10
Steam coal:	
No. 6 slack	4.55 to 4.60
No. 8 slack	4.90 to 4.95
Youghiogheny	4.95 to 5.05
No. 8, ¾-in.	5.45 to 5.55
No. 6 mine-run	4.55
No. 8 mine-run	4.90

DETROIT

Despite a slight stimulus in retail domestic lines due to colder weather the Detroit coal trade is generally inactive.

Bituminous—Only a small degree of activity is discernible in the bituminous division of the coal trade in Detroit. Neither the users of steam coal nor the retail dealers seem willing to give receptive attention to offers of additional stock at this time. Jobbers say few of the buyers show any disposition to consider contracts at present, though customarily the matter of contracts is of large interest at this period of the year.

Indifference of the Detroit buyers is ascribed to the large stocks of bituminous that are still filling storage yards of the retailers and appear in enormous reserves of the steam plants. Some of the latter are said to have sufficient coal in reserve to provide for normal needs until nearly July. Low grade stock forming a substantial part in many of these reserves is chiefly held responsible for fires that have occasioned considerable inconvenience and annoyance to the owners.

The wintery temperature of the early part of the month was productive of larger demands on retail dealers from household consumers, most of whom, however, were asking for anthracite coal or coke, while the dealers would more gladly see sales of the abnormal accretions of bituminous coal that were put in when the Fuel Administration regulations seemed to make that form of coal the only kind that would be available for most of the household consumers. Many of the retailers will be obliged to carry over large stocks into the summer, which with a more plentiful supply of anthracite next winter may prove difficult to move even then.

Jobbers say the last prices made effective by the Fuel Adiministration are still being maintained on practically all the business they are receiving through occasional sales, with demurrage impending, show a slight shading of price.

COLUMBUS

A slight improvement is reported in the demand, especially for steam grades. Domestic trade is rather quiet, due to the continued warm weather. Prices are somewhat unsteady although cutting is not as common as formerly.

The principal feature of the coal trade in Ohio is the approaching contract period for steam tonnage. Operators and jobbers alike are wondering what will happen when Apr. 1 rolls around. That is the date for a large number of steam contracts to expire and consequently there is much question as to the future. It is believed by a large number of producers that prices will be pretty generally maintained at government levels, as it is quite close to the cost of production, plus a reasonable profit.

Railroads are now buying a larger tonnage and that is stimulating production to a certain extent. Some of the larger consumers in industrial circles are running short of fuel and are buying in the open market. But generally speaking, reserve stocks are still large and little increase is looked for within the coming few weeks. The weakest feature is fine coal, which is a drug on the market. Prices on screenings and other small sizes are being cut to a greater extent than any other grade. Mine-run and prepared sizes are holding up fairly well.

The domestic trade is rather slow. Outside of the demand for the so-called fancy grades, such as Pocahontas, there is little domestic tonnage moving. Retail stocks are apparently sufficient for the present and there is no disposition to increase them. The unusually warm winter has caused heavy stocks to be accumulated by some retailers, some of which will have to be carried over. Reports show that consumers will also carry over a considerable amount, but not as much as was previously supposed.

CINCINNATI

Market remains quiet, but improvement in tone is noted. Some contracts are being signed, on a basis of present prices. There is little activity.

Coal men in the Cincinnati district report a slight improvement in the tone of the market lately, evidenced more by almost intangible indications of a change in feeling than by any specific change in demand or in prices. The work of reëstablishing the coals which move through this gateway on the markets where they were formerly distributed is getting slowly under way, hampered, naturally, by the extreme quiet of the market and the negligible demand noted in all quarters. It is taken for granted, however, that as time goes on this process will be hastened, to a point where the normal channels of distribution will again be established, and a volume depending on conditions will be distributed regularly.

Locally demand remains as it has been for some weeks past, quiet in all departments of the market, and it bids fair to remain so indefinitely, in the absence of some factor to improve it which is not now in sight. The weather seems definitely to have settled into spring, as generally expected, and prospects of further cold weather, necessitating fuel consumption for heating purposes, are getting more and more remote.

Interest in contracts for the year is confined largely to dealers and their agents, as consumers naturally feel that the situation is in their hands. However, large industrial concerns, whose consumption of coal is a fixed quantity, realize that it might prove dangerous, as well as bad business, to neglect arranging for their supply of coal, and are accordingly entering into contracts with their coal connections for their regular supply.

LOUISVILLE

Operators and Jobbers reporting slightly better demand for steam coal, with domestic demand about the same. Production said to be slightly larger. Producers disturbed over labor situation, and refusing long-term contracts.

The coal trade reports a slight improvement in steam demand, and is generally of the belief that things will open up somewhat about Apr. 1. It is claimed that the mines are doing slightly better than they were, production being around 50 per cent. for the fields. There is a fair demand for domestic coal, with dealers buying close for immediate use, and no large stocks in this market. A good deal of coal is on board cars at mines awaiting orders for shipment.

Prices are ruling rather firmly on domestic, but run-of-mine and nut and slack are slightly weaker in the eastern Kentucky fields. Western Kentucky operators are holding firmly to their old prices, claiming that it is impossible to produce coal profitably under existing conditions for less money than the Fuel Administration figures. Some western Kentucky operators claim that they will close down rather than cut prices, as they have operated many years on a very meager profit, and sometimes have met with direct losses. The war is said to have saved many of them from bankruptcy, in their efforts to compete with higher grade coals on a lower price basis, due to the cost of production being about the same for both grades.

Mine quotations, on short ton basis, not including brokerage of 15c. a ton are:

	Eastern Kentucky	Western Kentucky
Block and egg	$2.85 to $3.00	$2.60
Run-of-mine	2.20 to 2.40	2.35
Nut and slack	1.85 to 2.00	2.05

These are basic prices, there being some mines getting more and some less. It is reported that some eastern Kentucky nut and slack has sold as low as $1.75 per ton, and some western Kentucky at $1.85. Some eastern Kentucky mines are getting $2.40 @2.50 for run-of-mine; and $2@2.10 for nut and slack.

The strength of the market was shown when the Louisville Railway Co. asked for prices on a year's contract, calling for eight to ten cars a day, and an annual tonnage of between 85,000 and 90,000 tons. The company was somewhat surprised at being quoted $2.05 on western Kentucky nut and slack, this being the lowest bid, as operators were afraid of long contracts, and the western Kentucky operator making the bid was doing so on a full price basis.

BIRMINGHAM

Market conditions fail to show improvement during the past week. Steam business weak, while domestic demand is holding up well. The dull steam trade curtails the supply of domestic sizes.

The inquiry and bookings for steam coal in this field is confined mostly to small tonnages to meet current requirements of consumers. The Southern Ry., which for some time has been only taking minimum deliveries on contracts in this district placed orders for an additional tonnage aggregating probably 50,000 tons, the business being prorated among the contract mines, and to some operations where no contracts were held. Other lines are only taking the minimum allowed in contracts. Steam quotations are as follows per net ton mines:

	Mine-Run	Prepared	Slack and Screenings
Big seam	$2.45	$2.75	$2.40
Black Creek and Cahaba	3.45	3.75	3.05
Corona Jagger-Pratt	2.85	3.05	2.45

There is need for more domestic coal than is now being obtained in this district, the output being seriously affected by the slump in the steam market; and while there is a feeling that a good demand will obtain for domestic grades right along, the supply will not be in line with the requirements until there is a very perceptible improvement in the steam trade. The usual Apr. 1 prices have not been announced, and little if any contract business has been offered, though inquiries are beginning to come in. Current quotations are about as follows per net ton mines:

	Lump and Nut
Black Creek and Cahaba	$3.85@4.50
Big Seam	2.90
Corona	3.40
Carbon Hill	3.15
Climax and Montvallo	5.00

Mining operations are on a much restricted basis, commercial mines running from two to five days per week.

Coke

CONNELLSVILLE

Softening in market continues. Operators do not have to run. Range in foundry coke.

Cost of production has now become a real factor in the coke market, the almost continually declining prices of the past two months having brought the market down to about the cost level for the higher priced operations. Counting everything, including overhead, and charging the coal at something like market value, there are many operations that will show more than $4 as cost, and that is a price at which coke is readily obtainable. Some operators have lower costs other than others and some are

willing to forego their overhead, as most of it would count if the mine were idle.

Some operators, having made large profits in the past two or three years, are disposed simply to stay out of the market except as they have contract coke to deliver and are not attempting to make the slight profit they might possibly secure by making additional sales. In this respect the industry is in better shape than ever before, as in past years some operators have had to operate, profits or no profits, merely to keep their money turning and to encourage the banks to which they owed money. All this is changed now, the operators being able to do as they please.

Furnace coke is freely offered, though not in very large lots, at $4, for prompt or delivery over a fortnight or month. There are some offerings at less, but most if not all of them could not be classified as standard grade. So much 72-hour coke is being made, with the short running time now so common, that there is plenty of foundry coke and 72-hour coke, of a grade that can be had at but little above the price for furnace. Fair grades, however, would command fully $4.50 and better grades $4.75 or $5, while two or three of the old line producers of well known brands, having contracts in force at $6, will not shade that figure at all, and of course they make few if any sales. The market is thus quotable at $4 for furnace and at $4.50@6 for foundry, per net ton at ovens.

Middle Western

GENERAL REVIEW

Market conditions healthier and optimism reigns. Prices holding up above former Government maximums. Small demand for steam coals.

During the past few days the market has developed a much healthier tone. This has been brought about, not so much by an actual increase in sales, but by recent developments in the stock market in New York and Chicago. All good industrial shares are in an upward movement, and it is generally thought that those in a position to know believe better times are in store for the country in the immediate future. At all events, it is a fact that the bigger operators and jobbers are looking forward with more optimism than heretofore.

Until very recently the operators in Franklin and Williamson Counties, of Illinois, and the Fourth Vein district of Indiana, have not made any contract prices. These gentlemen felt that conditions were too unsettled to justify the making of a price on their coal to cover a year's shipments. Now that the coal industry has had a chance to adjust itself, the operators feel safe in quoting contract prices.

Given below are the figures for Franklin and Williamson Counties. Opposite them are the prices set on these coals by the Government, which prices were canceled by the Fuel Administration effective Feb. 1:

	Contract Price F.o.b. Mines, per Ton	Former Government Price per Ton
6x6-in. furnace	$2.75	$2.55
6 in. lump	2.75	2.55
3x2-in. small egg	2.75	2.55
2x1½-in. stove	2.75	2.55
1¼x¾-in. chestnut	2.65	2.55
¾x½-in. pea	2.55	2.55
Mine-run	2.45	2.35
2-in. screenings	2.20	2.05
1½-in. screenings	2.10	2.05
¾-in. screenings	2.00	2.05
No. 5 or ½-in. screenings	1.85	2.05

The contract prices for the Fourth Vein district of Indiana are as follows:

4-in. lump	$2.75	$2.55
2½-in. lump	2.70	2.55
4x2½-in. egg	2.70	2.55
4x1½-in. railroad egg	2.65	2.55
2x1½-in. nut	2.65	2.55
1¼-in. lump	2.65	2.55
Mine-run	2.45	2.35
2-in. screenings	2.25	2.05
1½-in. screenings	2.15	2.05

A glance at the foregoing figures will show conclusively that the operators do not propose to run their mines and deplete their properties at a loss. It also shows the operator—that is, the larger and more substantial ones—have confidence in the future.

Actual market conditions for the past week have been about as usual—that is, there has been but little demand for steam coals. What steam coal is moving is, nine times out of ten, sold at the full price. The domestic situation today is unusual, inasmuch as most of the large mines producing good coal are from one to two weeks behind on practically all sizes of their domestic products. As a result, and in order to get full running time, as well as keep cheap coal off the market, steam sizes are being stored until the time will come for a strong steam coal demand.

CHICAGO

Domestic coal in good demand, though steam coal market is inactive.

The domestic trade in Chicago is fairly active, with good coals in demand. This is due entirely to the cold snaps this city has been enjoying for the past week. The weather man also promises a few more weeks of winter before spring arrives. The steam coal market, as usual, continues inactive, and not much change is to be looked for during the next few weeks. Operators and jobbers report shipments cut down rather than increased.

There is a sharp demand in Chicago for good coal salesmen. A great many companies let their sales organizations go to pieces during the last few years, when coal was scarce, and as a result, now that a good sales force is of the utmost importance, these operators and jobbers are doing their best to rebuild their organizations.

MILWAUKEE

Market continues dull and lethargic. Holders of coal doing everything possible to reduce stocks.

The coal market continues in a lethargic state, with mild, spring-like weather operating to check consumption. Dealers are bending every energy to reduce stocks, which are heavy for the season, as there is bound to be a loss in holdover bituminous at least. All agree that there will be no material changes in prices until May; as to what will come then nobody will venture to prophecy. Some hard coal continues to come by rail; also small consignments of screened Pocahontas. Shipments to the interior continue light.

Following are the coal prices at Milwaukee, per short ton, effective Mar. 1. The prices given include delivery. At the yards the prices are 50c. per ton less:

	Domestic Short Ton
Anthracite—	
Egg	$12.20
Stove	12.40
Nut	12.50
Pea	11.00
Buckwheat	10.60
Bituminous—	
Pocahontas mine-run	$8.15
Hocking, screened	7.90
Youghiogheny, screened	7.90
Pittsburgh, No. 8, screened	7.90
West Virginia, screened	8.40
Splint, screened	8.40
Kentucky, screened	8.40
Illinois, screened	7.25
Coke—	
Solvay, large sizes	$11.50
Solvay, small sizes	10.25
Smithing	8.40
Steam—	
Youghiogheny, Hocking and Pittsburgh	
No. 8, screened	$7.18
No. 8, pile run	6.93
No. 8 screenings	6.68
West Virginia, Kentucky and splint	
Screened	7.68
Pile run	7.43
Screenings	7.18
Illinois and Indiana, screened	6.50
Pile run	6.25
Screenings	6.00
Smithing	7.68

ST. LOUIS

A continued quiet and easy market, with no demand of any kind. Steam and domestic business falling off. Surplus of all kinds of coal, with nothing promising to look forward to.

The local condition still continue to be a problem. The steam demand seems to be falling off instead of picking up, with the result that the market is glutted with steam sizes. There is nothing to indicate at this time that these conditions will improve. If anything, it is likely to grow worse. This not only applies to St. Louis proper, but it is general throughout this section.

The mild weather continues and there is little demand for domestic coal of any kind. Such orders as are being taken are usually for small lots. Then, too, it is usually for the cheaper grades of coal. A careful survey of the country districts reveals the fact that former users of coal have found it much more economical to use wood, which has been exceedingly plentiful the last couple of months on account of the oversupply of labor. The mild weather gives the farmer a chance to get the wood cut and hauled in without much trouble.

The local demand for anthracite is extremely easy and there is practically no demand for smokeless, with no Arkansas coming in. The local supply of coke continues to pile up, with very litle movement and no prospects of much for the future.

There is no change in the retail market, and the prevailing circular per net ton f.o.b. mines is:

Franklin County		Mt. Olive and Staunton	Standard
Prepared sizes, lump, egg, Nos. 1 and 2 nut	$2.75	.....	.....
Williamson County			
Prepared sizes, lump, egg, nut	$2.55	$2.55	$1.90@2.25
Mine-run	2.20	2.20	1.60@1.70
Screenings	2.05	2.05	.95@1.10
3-in. lump	....	2.30	
2-in. lump	....	....	1.75@1.90

Williamson-Franklin rate to St. Louis is $1.10; other rates 92½c.

Coal and Coke Securities

New York Stock Exchange Closing Quotations Mar. 17, 1919

STOCKS	Ticker Abvn.	Bid	Asked
American Coal Co. of Allegheny	(ACL)	45	....
Burns Brothers, Com	(BB)	143	145
Burns Brothers, Pfd	(BB)	110	115
Central Coal & Coke, Com	(CK)	55	....
Central Coal & Coke, Pfd	(CK)	63	....
Colorado Fuel & Iron, Com	(CF)	43½	43¾
Colorado Fuel & Iron, Pfd	(CF)	99	125
Consolidation Coal of Maryland	(CGM)	75	....
Elk Horn Coal, Com	(EH)	27	28
Elk Horn Coal, Pfd	(EH)	....	47
Island Creek Coal, Com	(ICR)	39	....
Island Creek Coal, pfd	(ICR)	75	....
Jefferson & Clearfield Coal & Iron, Pfd	(JF)	60	....
New Central Coal of West Va	(NCC)	5	....
Pittsburgh Coal, Com	(PC)	48¾	49
Pittsburgh Coal, Pfd	(PC)	85¼	86
Pond Creek Coal	(PD)	12½	13½
Viginia Iron, Coal & Coke	(VK)	58	60

*Ex. Div.

BONDS	Bid	Asi.
Cahaba Coal, 1st Gtd., 6s, 1922	90	....
Clearfield Bituminous Coal, 1st 4s, Ser. A., 1940	71	....
Colorado Fuel & Iron, Gen. 5s 1943	89¼	90
Colorado Indus. 1st Mtg. & Col. Tr. 5s, 1934	74¼	76
Consolidation Coal of Maryland, 1st Ref. 5s, 1950	88	91
Grand River Coal & Coke, 1st 6s, 1919	....	....
Jefferson & Clearfield Coal & Iron, 2d Mtg. 5s, 1926	96½	....
Lehigh Valley Coal, 1st Gtd. 5s, 1933	98⅜	....
Lehigh Valley Coal, Gtd. Int. Red. to 4%, 1933	79½	....
Lehigh Val. Coal & Nav. Con. S. F., 4½s, Ser. A, 1954	90	....
Pleasant Valley Coal, 1st S. F. 5s, 1928	80½	....
Pocahontas Coal & Coke, Joint 4s, 1941	83½	85
Pocahontas Con. Collieries, 1st S. F. 5s, 1957	88	90
Roch. & Pitts. Coal & Ir., Helvetia Pur. Money 5s, 1946	99½	....
St. L., Rocky Mnt. & Pac. Stamped 5s, 1955	88½	83
Tenn. Coal, Iron & R.R., Gen. 5s, 1951	92¼	94¼
Utah Fuel, 1st Sinking Fund, 5s, 1931	87	....
Victor Fuel, 1st Mtg. Sinking Fund 5s, 1953	55	70
Virginia Iron, Coal & Coke 1st 5s, 1949	85½	87